

**REQUEST FOR QUOTATIONS (RFQ): SEWER INFRASTRUCTURE REHABILITATION USING  
PIPE BURSTING TRENCHLESS TECHNOLOGIES**

The Nelson Mandela Bay Municipality invites bidders for the emergency **SEWER INFRASTRUCTURE REHABILITATION USING PIPE BURSTING TRENCHLESS TECHNOLOGIES**.

A minimum of 6CE CIDB contractor grading designations is required.

Only bidders who submit the documentation required in accordance with the requirements of this RFQ are eligible to submit quotations. In addition, bidders must meet the minimum requirements as specified.

Documents will be accessible on the NMBM website page on **13 July 2023** and must be returned to SCM on **18 July 2023** by any means to the Nelson Mandela Bay Municipality.

A compulsory clarification meeting with representatives of the Employer will take place physical on **14 July 2023 (Thursday) starting at 11:00 until 12:00**, where all the technical and contractual aspects of the document will be explained at the boardroom of the Supply Chain Management Offices, Harrower Road Depot, C/O Buxton Avenue and Harrower Road, North End, Port Elizabeth 6001.

Queries relating to this bid document must be submitted to Ms N. Fumbeza [nfumbeza@mandelametro.gov.za](mailto:nfumbeza@mandelametro.gov.za) in writing and queries related to technical clarification must be addressed in writing to Mr ML Muthambi, Project Manager, email: [mmuthambi@mandelametro.gov.za](mailto:mmuthambi@mandelametro.gov.za) and [znyila@mandelametro.gov.za](mailto:znyila@mandelametro.gov.za), Acting Director Wastewater Conveyance. Responses will be sent to all the bidders in writing.

The closing time for receipt of quotations is **11:00 am 20 July 2023** Quotations must be enclosed in sealed envelopes, bearing the applicable reference, and must be addressed to:

**THE CHIEF FINANCIAL OFFICER: FINANCE DEPARTMENT,  
SUPPLY CHAIN MANAGEMENT UNIT,  
PORT ELIZABETH, 6001**

<b>SCOPE OF WORKS</b>
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The Contract includes the following:

- i. The regular rehabilitation of sewer pipes using pipe bursting trenchless technologies for a 12months period. This shall include the welding and jointing of pipes.
- ii. Sewer pipes to be rehabilitated shall be indicated by the Employer's Agent and shall include normal routine rehabilitation and emergency rehabilitation.
- iii. Locating buried sewer manholes or control structures by the contractor and the making safe thereof on completion of the work.
- iv. Dealing with live sewage liquid in pipelines.
- v. Lateral/erf connection reinstatement immediately after installation of the liner by means of robotic cutting from within the pipe or by excavation.
- vi. Connections to manholes.
- vii. Point repairs.
- viii. Recording location of manholes for As-Built requirements.
- ix. CCTV camera inspections to verify the installations.

The Contractor will not have a continuous project, but will be instructed by the Employer's Agent to do certain minor projects as and when required through the period of the Contract.

**C3.4: CONSTRUCTION**
**C3.4.1 WORKS SPECIFICATION**
**C3.4.1.1 Applicable SANS standards**

The applicable SABS 1200 Standardised Specifications for Civil Engineering Construction read in conjunction with the SABS 0120 Code of Practise for use with standardised specifications for Civil Engineering Construction and Contract Documents will apply until such time as the SANS standards for civil engineering are finalised.

**C3.4.1.2 Other standards**

The standard details as published by the city engineer's department, NMBM dated July 2007. The Contractor shall obtain their own copy.

**C3.4.1.3 Applicable national and international standards**

For the purpose of this Contract the latest issues of the following Standardized Specifications for Civil Engineering Construction, applicable at the date of the tender advertisement shall apply:

SABS 1200 A	:	GENERAL
SABS 1200 AB	:	ENGINEER'S OFFICE
SABS 1200 C	:	SITE CLEARANCE
SABS 1200 D	:	EARTHWORKS
SABS 1200 DB	:	EARTHWORKS (PIPE TRENCHES)
SABS 1200 LB	:	BEDDING (PIPES)
SABS 1200 LD	:	SEWERS

SASTT-TS-TT2 : TRENCHLESS CONSTRUCTION WORKS – PART TT2: PIPE BURSTING

Notes to bidder:

1. Should any variation and/or addition conflict with the requirements of the standardized specification, the variation or addition will prevail.
2. The term "project specifications" appearing in any of the SANS1200 standardised specifications must be replaced with the term "scope of work".
3. The General Conditions of Contract applicable to this contract are the "Conditions of Contract for Construction Works (3<sup>rd</sup> Edition) 2015" published by the South African Institute of Civil Engineering, together with the Special Conditions of Contract form part of the contract.

The variations and additions to the specifications are listed in C3.4.11.

In addition, the following Particular Specifications for work not covered by the SABS 1200 Standardized Specifications are also bound in the Scope of Work.

**C3.4.1.4 Particular/Generic Specifications**

The particular and/or generic specifications listed below are applicable to this contract. These specifications are bound into this document in section C3.4 Construction.

<b>PA</b>	<b>CCTV Camera Inspection of Sewers</b>
<b>PB</b>	<b>Environmental Management</b>
<b>PC</b>	<b>Health and Safety Specifications</b>

**C3.4.1.5 Certification by recognised bodies**

Where materials to be used in the works are required to comply with a SANS / SABS specification, they will be accepted as complying with the SANS / SABS specification if one of the following is satisfied:

- The display of a SANS / SABS mark on the product with a copy of the SANS / SABS certificate that allows the manufacturer to use the mark, or

- All the criteria in the relevant SABS / SABS specification is measured and confirmed on site or in an approved laboratory.

The same will apply to materials specified to comply with ISO, BS, ASTM or other international specifications.

#### **C3.4.1.6 Agrément certificates**

Not applicable.

### **C3.4.2 PLANT AND MATERIALS**

#### **C3.4.2.1 Plant and materials supplied by the employer**

The Employer shall not supply any plant or materials for use on this contract. The Contractor shall provide all plant and materials.

#### **C3.4.2.2 Materials, samples and shop drawings**

Materials or work, which does not conform to the approved samples submitted in terms of Clause 7.1 of the Conditions of Contract, will be rejected. The Employer's Agent reserves the right to submit samples to tests to ensure that the material represented by the sample meets the specification requirements.

The costs of any such test conducted by or on behalf of the Employer's Agent, the results of which indicate that the samples provided by the Contractor do not conform to the requirements of the Contract, shall, in accordance with the provisions of Clause 7.1 of the Conditions of Contract, be for the Contractor's account.

### **C3.4.3 CONSTRUCTION EQUIPMENT**

#### **C3.4.3.1 Requirements for equipment**

All equipment used on this Contract shall comply with the requirements of the Occupational Health and Safety Act (1993), the NMBM Waste Management By-Laws (2010), the National Road Traffic Act (1996), the Employers Health and Safety Specification (Particular Specification PC), and any other applicable Acts and amendments to these Acts and By-Laws.

As the equipment used to transport material from the sewer pipes to the disposal site(s) may cause health and environmental damage the tanker used in the cleaning process is to be registered in the appropriate class of vehicle and must be registered in terms of the NMBM By-Laws and National Legislation.

All construction plant and equipment used on this contract shall be in good working order, well maintained, of adequate size and fit for purpose. No plant or equipment that leaks oil, fuel or hydraulic fluids may be used on site.

Any plant or equipment that, in the opinion of the Employer's Agent, is not of adequate size or fit for use shall be removed from the site and replaced with acceptable plant and equipment, all at the Contractor's cost.

The Contractor shall ensure that adequate equipment is available for the entire pipe bursting and sliplining process. This shall include equipment for the maintenance of sewer flows, pipe cleaning, CCTV inspection, point repairs, butt welding of HDPE pipes, pressure testing of long welded HDPE pipe, pipe bursting, sliplining of the existing sewer pipe and testing of the relined sewer. Where pipe bursting is required to accommodate an HDPE pipe of similar or greater diameter than the original, the equipment shall be suitable for exerting the necessary forces without damage to the manholes. The bursting head shall create a hole big enough that an annulus of approximately 20 mm is created around the new pipe. In wet clayish collapsing soil, the bursting length shall be reduced to suit the equipment's capability and to prevent stoppage. In general the equipment shall be able to operate in varying soil conditions.

#### **C3.4.3.2 Equipment provided by the employer**

The Employer shall not supply any equipment.

#### **C3.4.4 EXISTING SERVICES**

The Contractor shall familiarize himself with all existing services and liaise with all relevant authorities for the location and detection of existing services. The Contractor shall also use all necessary means to locate and expose services without damage to such services. The Contractor shall protect any services which are visible or can be reasonably expected to be in certain positions. If the Employer's Agent rules that the Contractor has negligently damaged services, the Contractor shall pay the amount certified by the Employer's Agent to the Employer. The Employer's Agent's ruling shall be final.

If the Employer's Agent rules that the damage was not due to the Contractor's negligence, the Employer shall pay for the repair of the services so damaged. The responsibility shall remain with the Contractor to establish the position of existing services prior to commencing any excavation.

#### **C3.4.5 SITE ESTABLISHMENT**

##### **C3.4.5.1 Water Supply**

The Contractor shall make his own arrangements regarding the supply of water.

The Contractor shall, at his own expense, be responsible for obtaining and distributing all water as may be required for the purposes of executing the Contract, including water for both construction purposes and domestic use as well as for making all arrangements in connection therewith. The Contractor shall further, at his own expense, be responsible for providing all necessaries for procuring, storing, transporting and applying water required for the execution of the Contract, including but not limited to all piping, valves, tanks, pumps, meters and other plant and equipment, as well as for all work and superintendence associated therewith.

The Contractor shall make himself thoroughly acquainted with the regulations relating to the use of water and shall take adequate measures to prevent the wastage of water.

The sources of all water utilised for the purposes of the Contract shall be subject to the prior approval of the Employer's Agent, which approval shall not be unreasonably withheld. The Contractor shall comply with all prevailing legislation in respect of drawing water from natural and other sources and shall, when required by the Employer's Agent, produce proof of such compliance.

The distribution of water shall be carried out by the Contractor strictly in accordance with the applicable laws and regulations. All water provided by the Contractor for construction purposes shall be clean, free from undesirable concentrations of deleterious salts and other materials and shall comply with any further relevant specifications of the Contract.

The Contractor shall, whenever reasonably required by the Employer's Agent, produce test results demonstrating such compliance. Water provided by the Contractor for human consumption shall be healthy and potable to the satisfaction of the health authorities in the area of the Site.

The Employer accepts no responsibility for the shortage of water due to any cause whatsoever or for the additional costs incurred by the Contractor as a result of such shortage.

The Contractor shall take note that no separate or direct payment of any kind whatsoever will be made for any cost incurred to obtain, distribute, consume and use water or for the provision of a water supply point or for the cost of water drawn. Payment for the aforementioned shall be deemed to be covered by the rates and prices tendered and paid for the various items of work included under the Contract.

##### **C3.4.5.2 Power / Electricity Supply**

The Contractor shall make his own arrangements with the Electricity Department for a supply of electricity if required and shall pay establishment and consumption costs at the tariffs ruling at the time.

The Contractor shall, at his own expense, be responsible for obtaining and distributing all electricity as he may require for the purposes of executing the Contract, including electricity for both construction purposes and domestic use as well as for making all arrangements in connection therewith.

The distribution of electricity shall be carried out by the Contractor strictly in accordance with the applicable laws and regulations. No separate payment will be made to the Contractor for the obtainment, distribution

and consumption of electricity, the costs of which will be deemed to be in the Contractor's tendered rates and prices.

#### **C3.4.5.3 Sanitary facilities**

The Contractor shall, at his own expense, be responsible for safely and hygienically dealing with and disposing of all human excrement and similar matter generated on the Site during the course of the Contract, all to the satisfaction of the responsible health authorities in the area of the Site as well as the Employer's Agent.

All such excrement shall be removed from the Site and shall not be disposed of by the Contractor on the Site. The Contractor shall further comply with any other requirements in this regard as may be stated in the Contract.

The Contractor shall further, as a minimum, supply and maintain chemical toilets for use by his workmen. The number of toilets shall be based on one toilet per fifteen personnel on site.

Under no circumstances will the Contractor's staff be allowed to use any other toilet facilities in and around the Site.

#### **C3.4.5.4 Transportation, collection and disposal site of waste**

As per the National Environmental Management Waste Act of 2008 (Act no.59 of 2008), all service providers who will be transporting waste to one of the municipal solid waste sites shall be registered with the relevant waste management officer in the municipality.

All material cleared on the site, rubble, spoil and refuse shall be disposed off at the one of the municipal solid waste sites. Hazardous material shall only be disposed of at the Aloes hazardous waste site.

These are dedicated disposal sites and therefore no separate overhaul shall be paid. The Contractor shall pay all charges levied at the waste site and must make allowance in his rates to cover these charges as no separate payment will be made in this regard.

#### **C3.4.5.5 Accommodation of employees**

The Contractor shall make his own arrangements for the accommodation of his employees. Where field accommodation is required, the Contractor shall comply fully with the wishes of the various landowners, as in their agreement with the Employer, to the satisfaction of both land owner and Employer.

### **C3.4.6 SITE USAGE**

Access to site shall be limited to the Contractor and his personnel. The Contractor shall be responsible to control unauthorized entry to the site and shall inform the Employer's Agent of any breach of such rules. The site shall be managed and used for its intended purpose. The Contractor is required to keep a visitors log, and ensure full compliance with site safety standards.

### **C3.4.7 PERMITS AND WAY LEAVES**

The contractor is responsible for obtaining all necessary permits and way leaves from all relevant authorities. The time to obtain such permits and way leaves should be factored on the programme of works. No time extension will be awarded to the contractor for permit and way leaves applications.

### **C3.4.8 FACILITIES PROVIDED BY THE CONTRACTOR**

#### **C3.4.8.1 Office for the Employer's Agent**

A separate office for the Employer's Agent is not required. The Contractor shall provide a plan table or desk and chair in his own office for use by the Employer's Agent.

Site meetings will be held in the Contractor's office, which must be big enough and have sufficient seating for this purpose.

#### **C3.4.8.2 Sanitary facilities**

No latrines are available and therefore the Contractor shall supply portable chemical toilets for use by his workmen. The number of toilets shall be based on one toilet per fifteen personnel on site. Under no circumstances will the Contractor's staff be allowed to use private or public toilet facilities.

The Contractor shall provide water and soap for his staff to be able to wash with at each site of the Works. The waste water shall be disposed of off-site.

Under no circumstances will the Contractor's staff be allowed to use public toilet facilities.

### **C3.4.9 FEATURES REQUIRING SPECIAL ATTENTION**

#### **C3.4.9.1 Site maintenance**

During progress of the work and upon completion thereof, the Site of the Works shall be kept and left in a clean and orderly condition. The Contractor shall store materials and equipment for which he is responsible in an orderly manner and shall keep the Site free from debris and obstructions.

#### **C3.4.9.2 Access to properties (where relevant)**

The Contractor shall organise the work to cause the least possible inconvenience to the public and to the property owners adjacent to or affected by the work, and except as hereunder provided, shall at all times provide and allow pedestrian and vehicular access to properties within or adjoining or affected by the area in which he is working. In this respect the Contractor's attention is drawn to Clause 8.1.2 of the Conditions of Contract.

Where applicable and if as a result of restricted road reserve widths and the nature of the work, the construction of bypasses is not feasible, construction shall be carried out under traffic conditions to provide access to erven and properties.

Notwithstanding the above, the Contractor may, with the prior approval of the Employer's Agent (which approval shall not be unreasonably withheld), make arrangements with and obtain the acceptance of the occupiers of erven and properties to close off part of a street, road, footpath or entrance temporarily, provided that the Contractor duly notifies the occupiers of the intended closure and its probable duration, and reopens the route as punctually as possible. Where possible, such streets, roads, footpaths and entrances shall be made safe and reopened to traffic overnight. Such closure shall not absolve the Contractor from his obligations under the Contract to provide access at all times. Barricades, traffic signs, drums and other safety measures appropriate to the circumstances shall be provided by the Contractor to suit the specific conditions.

#### **C3.4.9.3 Monthly statements and payment certificates**

The statement to be submitted by the Contractor in terms of Clause 6.10 of the Conditions of Contract shall be prepared by the Contractor at his own cost, strictly in accordance with the standard payment certificate prescribed by the Employer's Agent, in digital electronic computer format. The Contractor shall, together with a copy of the digital electronic computer file of the statement, submit two (2) A4 size paper copies of the statement.

For the purposes of the Employer's Agent's payment certificate, the Contractor shall subsequently be responsible, at his own cost, for making such adjustments to his statement as may be required by the Employer's Agent for the purposes of accurately reflecting the actual quantities and amounts which the Employer's Agent deems to be due and payable to the Contractor in the payment certificate.

The Contractor shall, at his own cost, make the said adjustments to the statement and return it to the Employer's Agent within three (3) normal working days from the date on which the Employer's Agent communicated to the Contractor the adjustments required. The Contractor shall submit to the Employer's Agent five (5) sets of A4 size paper copies of such adjusted statement, together with a copy of the electronic digital computer file thereof.

Any delay by the Contractor in making the said adjustments and submitting to the Employer's Agent the requisite copies of the adjusted statement for the purposes of the Employer's Agent's payment certificate



will be added to the times allowed to the Employer's Agent in terms of Clause 6.10.4 of the Conditions of Contract to submit the signed payment certificate to the Employer and the Contractor. Any such delay will also be added to the period in which the Employer is required to make payment to the Contractor.

The Contractor is further required to complete the monthly labour payment schedule forms, refer to PSA 8.1.2.2 and Annexure A. These forms shall be submitted together with the Contractor's monthly payment certificates. Payment of the contractor is conditional on this information being accurate and timeously provided.

#### **C3.4.9.4 Notices, signs, barricades and advertisements**

All notices, signs and barricades, as well as advertisements, may be used only if approved by the Employer's Agent. The Contractor shall be responsible for their supply, erection, maintenance and ultimate removal and shall make provision for this in his tendered rates.

The Employer's Agent shall have the right to instruct the Contractor to move any sign, notice or advertisement to another position, or to remove it from the Site of the Works if in his opinion it is unsatisfactory, inconvenient or dangerous.

#### **C3.4.9.5 Workmanship and quality control**

The Employer, the Contractor and the Employer's Agent shall operate and maintain their own individual contract administration and quality assurance systems.

The Contractor shall implement his own Quality Assurance plan for executing the works for compliance with the aforementioned standards and specifications.

The onus to produce work that conforms in quality and accuracy of detail to the requirements of the Specifications and Drawings rests with the Contractor, and the Contractor shall, at his own expense, institute a quality control system and provide suitably qualified and experienced engineers, foremen, surveyors, materials technicians, other technicians and technical staff, together with all transport, instruments and equipment to ensure adequate supervision and positive control of the Works at all times.

The cost of supervision and process control, including testing and mix designs carried out by the Contractor, will be deemed to be included in the rates tendered for the related items of work.

The Contractor's attention is drawn to the provisions of the various Standardized Specifications regarding the minimum frequency of testing required. The Contractor shall, at his own discretion, increase this frequency where necessary to ensure adequate control.

On completion and submission of every part of the work to the Employer's Agent for examination and measurement, the Contractor shall furnish the Employer's Agent with the results of the relevant tests, mix designs, measurements and levels to demonstrate the achievement of compliance with the Specifications.

i. Contractor to engage services of an independent laboratory.

Notwithstanding the requirements of the Specifications pertaining to testing and quality control, the Contractor shall engage the services of an approved independent laboratory to undertake all testing of materials, the results of which are specified in, or may reasonably be inferred from, the Contract. These results will be taken into consideration by the Employer's Agent in deciding whether the quality of materials utilised and workmanship achieved by the Contractor comply with the requirements of the Specifications. The foregoing shall apply irrespective of whether the specifications indicate that the said testing is to be carried out by the Employer's Agent or by the Contractor.

The Contractor shall be responsible for arranging with the independent testing laboratory for the timeous carrying out of all such testing specified in the Contract, at not less than the frequencies and in the manner specified. The Contractor shall promptly provide the Employer's Agent with copies of the results of all such testing carried out by the independent laboratory.

For the purposes of this clause, an "independent laboratory" shall mean an "approved laboratory" (as



defined in subclause PSA 7.2) which is not under the management or control of the Contractor and in which the Contractor has no financial interest, nor which has any control or financial interest in the Contractor.

ii. Additional testing required by the Employer's Agent

In addition to the provisions of subclause C3.4.9.5 (i): Contractor to engage services of an independent laboratory, the Employer's Agent shall be entitled at times during the Contract to require that the Contractor arrange with the independent laboratory to carry out any such tests, additional to those described in subclause C3.4.9.5 (i), at such times and at such locations in the Works as the Employer's Agent shall prescribe. The Contractor shall promptly and without delay arrange with the independent laboratory for carrying out all such additional testing as required by the Employer's Agent, and copies of the test results shall be promptly submitted to the Employer's Agent.

iii. Costs of testing

(a) Tests in terms of subclause C3.4.9.5 (i)

The costs of all testing carried out by the independent laboratory in accordance with the requirements of subclause C3.4.9.5 (i), above shall be borne by the Contractor and shall be deemed to be included in the tendered rates and prices for the respective items of work as listed in the Schedule of Rates and which require testing in terms of the Specifications. No separate payments will be made by the Employer to the Contractor in respect of any testing carried out in terms of subclause C3.4.9.5 (i).

Where, as a result of the consistency of the materials varying or as a result of failure to meet the required specifications for the work, it becomes necessary to carry out additional tests (e.g. re-tests on rectified work and/or replacement materials), the costs of such additional testing shall be for the Contractor's account.

(b) Additional tests required by the Employer's Agent

The costs of any additional tests required by the Employer's Agent in terms of subclause C3.4.9.5 (i) Additional testing required by the Employer's Agent, shall be reimbursed to the Contractor against substitution of the Provisional Sum allowed therefore in the Schedule of Rates; provided always that the costs of any such additional tests ordered by the Employer's Agent, the results of which indicate that the quality of the materials utilised and/or the standard of workmanship achieved are/is not in accordance with the specifications, shall not be reimbursable to the Contractor.

#### **C3.4.9.6 Public Safety**

The Contractor shall at all times ensure that his operations do not endanger any member of the public.

As the area is adjacent to a residential area the Contractor shall take special precautions to prevent public access to any danger areas on the Works, e.g. by temporary barricades and/or fencing.

#### **C3.4.9.7 Sand and Dust Control**

The Contractor shall, for the duration of the contract, take appropriate measures to control the dust and soil movement which may arise due to his operations. Such measures will include, but not be limited to, watering, placing tarpaulins on exposed areas, placing thatch grass on exposed areas, as appropriate, or instructed by the Employer's Agent.

#### **C3.4.9.8 Dealing with Sewage liquid in pipelines**

All pipelines to be cleaned are live sewers. The Contractor shall make his own arrangements and devise his own methods for dealing with the liquid portion when removing grit and other matter from the sewers. Under no circumstances may the flow in the sewers be stopped.

Sewage liquid shall be discharged back into the sewerage system without causing overload or disruption in the sewerage system.

#### **C3.4.9.9 Bypassing of Flows**

During execution of the work, the Contractor shall be responsible for continuity of sanitary sewer service. The maximum allowable time for consumers to be without a sewerage service is six hours. Written notice, to the Employer's Agent's approval, must be given to affected residents 24 hours before shutdown. In this notice the residents must be informed of the period the service will be out of action and of the Contractor's intended schedule for restoring the full service and his contingency plans.

The Contractor, at the sole discretion of the Employer's Agent, may plug the main line sewer at an existing upstream manhole. The Contractor will generally be allowed to burst low flowing network sewers without having special measures for diverting the flow in place, provided that the resulting sewage backup does not cause any overflows.

However, to cater for the risk of stoppages occurring due to unforeseen circumstances, the Contractor must have a 24-hour standby service for maintaining the existing sewage flow **in any section of the work covered by the Contract**. The Contractor shall be responsible for providing standby sewage tankers, sewage pumps or any other acceptable means to pump or remove sewage from the manholes (where backup of the flow occurs as a result of the Contractor's operations) and discharging it into manholes downstream from the work area without overloading the downstream flow at any stage. Emergency excavation in order to restart the pipe lining operation and all repairs shall be carried out without delay. The Contractor shall be solely responsible for clean-up, repair, property damage costs and claims resulting from failure to ensure overflows do not occur.

If the lining operation cannot feasibly be completed without the risk of overflows, the Contractor shall bypass the main sewer flow around the pipe to be replaced into adjacent sanitary sewers. He shall submit a detailed plan in this regard to the Contracting Authority for approval.

No open channel flow on street level or the discharge of any sewage into the stormwater system will be allowed. Any pumping at night time, over weekends or on public holidays will have to be silenced by a suitable method.

Pumps and the bypass lines shall be of adequate flow capacity and size to handle all flows without sewage backup to private property. The Contractor shall be solely responsible for clean-up, repair, property damage costs and claims resulting from the failure of the diversion system.

The Contractor shall submit specifications for all pumping equipment to the Contracting Authority for approval. A list of all backup equipment to be held in reserve on the job shall be provided. Barring unforeseen circumstances beyond the Contractor's control, the Contractor will not be allowed to pump overnight or over weekends.

All costs for plugging, temporary lines, sewerage tankers, by-pass pumping, etc., required during installation of the pipe, shall be subsidiary to the pipe reconstruction item and shall be paid under the items provided in the schedule. However, the Employer's Agent reserves the right to disallow payment if, in his opinion, the use of such measures could have been avoided by the Contractor or was necessary due to the Contractor's negligence."

#### **C3.4.9.10 Locating of buried Manholes or Control Structures**

The work may at times require the locating and exposing of buried sewer manholes or control structures by the Contractor. On completion of the works the Contractor shall make the area around the manhole or control structure safe, mark the location of the structure and report the buried structure to the Employer's Agent for further action by the Municipality. Payment for the above will be deemed to be covered by the rates tendered.

#### **C3.4.9.11 Work on Private Property**

The Contractor shall, by means of written notice, keep the occupants of private properties advised at all times prior to disrupting access to, or egress from their properties or the need to gain access to their property for work on mid-block sewers. The Contractor shall give the occupants of private properties a minimum of three working days written notice of such disruption to the occupants of the affected properties. The notice must be hand delivered to the occupant/owner of the property and the occupant/owner must sign for the receipt of such a notice. The contractor must keep a proper record of the acknowledgement of

receipt by the occupants/owner of private properties of such notices. In cases where the occupants/owner are not in attendance, the notice must be placed securely in a visible position to the main entrance of the building on the said property.

The notice to be issued to the occupants of private properties by the Contractor shall be prepared by the Employer's Agent. The Contractor must therefore provide the Employer's Agent with details of his responsible person and telephone numbers of which will be included in the notice. If any change to the notice be required, the Contractor must notify the Employer's Agent immediately to allow for the amendment of the notice. The Contractor will be responsible for the reproduction and issuing of the notices. Provision for this must be allowed for in the tendered rates.

#### **C3.4.9.12 Employment of local labour**

It is the intention that this Contract should make maximum use of the local labour force that is presently under-employed. To this end the Contractor shall limit the utilisation on the Contract of non-local employees to that of key personnel only and to employ and train local labour to the extent necessary for the execution and completion of this Contract.

The Contractor shall fill in the form entitled Key Personnel in the Forms to be completed by the Bidder. The data stated on the above-mentioned form will be strictly monitored during the Contract period and any deviations therefrom shall be subject to the prior approval of the Employer's Agent, which approval shall not be unreasonably withheld.

#### **C3.4.9.13 Sanitary Conditions**

Unhygienic habits and other behaviour that may cause contamination of any part of the works or with the surrounding areas are strictly prohibited. The Contractor shall ensure that sanitary conditions prevail throughout the Site and that his workmen are aware of, and comply with, this rule.

#### **C3.4.9.14 Compliance with Environmental Legislation and the Minimum requirements for Handling, Classification and Disposal of Hazardous Waste**

The Contractor needs to pay special attention to the National Environmental Management Act of 1998, Nation Environmental Management Waste Act of 2008 and the Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste 2005 and needs to ensure that he complies with the requirements at all times.

### **C3.4.10 EXTENSION OF TIME DUE TO ABNORMAL RAINFALL**

A claim for extension of time in respect of delays suffered by the Contractor in consequence of abnormal wet climatic conditions will be considered by the Employer's Agent in terms of Clause 5.12 of the Conditions of Contract and in accordance with provisions set out hereunder.

For the purposes of extension of time, a delay caused by abnormal wet climatic conditions will be regarded as a delay only if, in the opinion of the Employer's Agent, all progress on an item or items of work on the critical path of the Contractor's working programme as approved in terms of Clause 5.6 of the Conditions of Contract has been brought to a halt.

Unless it is customary to carry out the work, in respect of which a delay was suffered, by rotary shifts or by day and by night, only delays to critical path items experienced as a result of wet climatic conditions during normal working hours (as defined in Clause 5.8 of the Conditions of Contract) will be taken into account for extension of time. This will apply notwithstanding the fact that a delay may have occurred on a portion of the Works on the critical path due to wet climatic conditions, which work was being executed outside the said normal hours with the permission of the Employer's Agent, granted in terms of Clause 5.8 of the Conditions of Contract.

The Contractor shall make due allowance within his programme submitted in terms of Clause 5.6 of the Conditions of Contract, for the total delay to work items on the critical path resulting from normal wet climatic conditions. The specified allowances for this Contract are defined in Clause 5.12 of the Conditions of Contract.

Extension of time, if granted by the Employer’s Agent, will be determined as the aggregate number of normal working hours for which all progress on the item or items on the critical path was brought to a halt as a result of wet climatic conditions, less the number of normal working days specified in Clause 5.12 of the Conditions of Contract.

In determining the revised Due Completion Date of the Contract, the Employer’s Agent shall add the equivalent number of normal working days delay determined in accordance with this Clause and all intervening normal non-working days to the prevailing Due Completion Date.

**C3.4.11 EPWP LABOUR INTENSIVE CONSTRUCTION**

**C3.4.11.1 General**

The Extended Public Works Programme (EPWP) is a country-wide government initiative aimed at creating jobs and imparting skills through public spending.

It involves re-orientating line function budgets so that government expenditure results in more work opportunities, for unskilled labour.

In accordance with its signed Memorandum of Understanding with the National Department of Public Works, the Nelson Mandela Bay Municipality (NMBM) is committed in ensuring that job creation opportunities are maximised on each project, and that every job opportunity created is recorded in line with the Department’s requirements and those of the Auditor General.

Any work or portion of work that can be undertaken by labour intensive methods on an efficient basis, shall be done in that manner, using targeted labour from the affected historically disadvantaged area, and shall be done in accordance with the requirements of the Expanded Public Works Programme (EPWP) of the Department of Labour.

**C3.4.11.2 Training of Targeted Labour**

The Contractor shall provide all the necessary on-the-job training to targeted labour to enable such labour to master the basic work techniques required to undertake the work in accordance with the requirements of the contract in a manner that does not compromise worker health & safety.

The Contractor shall allow two (2) working days per month to the targeted labour for standard EPWP basic life skills training and/or accredited training. The cost of EPWP life skills training of targeted labour will be funded by the local office of the Department of Labour. A provisional sum has been added in the Schedule of Rates for arranging accredited training through accredited training service providers. Training will take place as close to the project site as practically possible. An allowance equal to 100% of the task rate or daily rate shall be paid by the Contractor to workers who attend basic life skills and/or accredited training.

**C3.4.11.3 EPWP Reporting Requirements**

The Contractor shall provide monthly production records showing the number of personnel employed using labour intensive construction methods, the wages paid and production measurement records, refer to the contents page for the relevant annexure for the reporting template. The NMBM may change the requirements for reporting from time to time.

The reporting frequency should be monthly, and the information must be submitted to the NMBM by no later than the 5th working day of the subsequent month to the reporting month. The records are to be submitted directly to the Employer monthly. Should the Contractor not submit the records timeously a fine will be imposed and the payment will not be processed by the Employer, refer to C1.2 Contract Data.

The information required is set out in the table below and the templates for items No. 1 to 4 refer to the contents page for the relevant annexure.

No.	Document	Frequency	Responsible Person
1	Contract Details Sheet	Once off	Employer and Agent
2	Monthly Labour Payment & Training Schedule	Monthly	Contractor

3	Labour Attendance Register	Monthly	Contractor
4	Monthly Labour Schedule	Monthly	Contractor
5	Copies of Employee Contracts	Once off	Contractor
6	Certified Copies of Employees ID Documents	Once off	Contractor
7	Expenditure report	Monthly	Employer and Agent

To meet the requirements of item No 7 the Employer's Agent must email a copy of the Contractors monthly payment certificates to the NMBM before physical submission.

#### **C3.4.11.4 Labour Intensive Competencies of Supervisory and Management Staff**

Contractors having a CIDB Contractor grading designation of 5CE and higher shall only engage supervisory and management staff in labour intensive works that have either completed or, for the period 1 July 2012 to 30 June 2014, are registered for training towards the skills programme outlined in Table 1 below.

The managing principal of Contractor (sole proprietor, the senior partner, the managing director or managing member of a close corporation) having a Contractor grading designation of 1CE, 2CE, 3CE and 4CE shall have personally completed or, for the period 1 July 2012 to 30 June 2014, be registered on a skills programme for the NQF level 2.

All other site supervisory staff in the employ of such contractors must have completed or, for the period 1 July 2012 to 30 June 2014, be registered on a skills programme for the NQF level 2 unit standards or NQF level 4 unit standards.

**Table 1: Skills Programme for Supervisory and Management Staff**

<b>Personnel</b>	<b>NQF level</b>	<b>Unit standard titles</b>	<b>Skills programme description</b>
Team leader/ supervisor	2	Apply labour intensive construction systems and techniques to work activities.	This unit standard must be completed and  any one of these unit standards
		Use Labour Intensive Construction Methods to Construct and Maintain Roads and Storm-water Drainage.	
		Use Labour Intensive Construction Methods to Construct and Maintain Water and Sanitation Services.	
		Use Labour Intensive Construction Methods to Construct, Repair and Maintain Structures.	
Foreman/ supervisor	4	Implement Labour Intensive Construction Systems and Techniques.	This unit standard must be completed and  any one of these unit standards
		Use Labour Intensive Construction Methods to Construct and Maintain Roads and Stormwater Drainage.	
		Use Labour Intensive Construction Methods to Construct and Maintain Water and Sanitation Services.	
		Use Labour Intensive Construction Methods to Construct, Repair and Maintain Structures.	
Construction Manager/ Manager (Contractor's most senior site representative)	5	Manage Labour Intensive Construction Processes.	Skills Programme against this single unit standard

#### **C3.4.11.5 Employment Conditions for Labour-Intensive Works and Construction**



The Ministerial Determination, Special Public Works Programmes, issued in terms of the Basic Conditions of Employment Act of 1997 by the Minister of Labour in Government Notice No. R63 of 25 January 2002 and reproduced below, shall apply to works described in the scope of work as being labour-intensive and undertaken by unskilled or semi-skilled workers.

This clause contains the standard terms and conditions for workers employed in elementary occupations on an Extended Public Works Programme (EPWP). These terms and conditions do NOT apply to persons employed in the supervision and management of a EPWP.

#### **C3.4.11.6 Terminology**

- “*Department*” means any department of the State, implementing agent or Contractor.
- “*Employer*” means any department, implementing agency or Contractor that hires workers to work in elementary occupations on a EPWP.
- “*Workers*” means any person working in an elementary occupation on an EPWP.
- “*Elementary occupation*” means any occupation involving unskilled or semi-skilled work.
- “*Management*” means any person employed by a department or implementing agency to administer or execute an EPWP.
- “*Task*” means a fixed quantity of work.
- “*task-based work*” means work in which a worker is paid a fixed rate for performing a task.
- “*task-rated worker*” means a worker paid based on the number of tasks completed.
- “*time-rated worker*” means a worker paid based on the length of time worked.

#### **C3.4.11.7 Terms of Work**

- Workers on an EPWP are employed on a temporary basis.
- A worker may NOT be employed for longer than 24 months in any five-year cycle on an EPWP.
- Employment on an EPWP does not qualify as employment as a contributor for the purposes of the Unemployment Insurance ACT 30 of 1966.

#### **C3.4.11.8 Normal Hours of Work**

- An Employer may not set tasks or hours of work that require a worker to work:
  - more than forty hours in any week
  - on more than five days in any week
  - for more than eight hours on any day
- An Employer and worker may agree that a worker will work four days per week. The worker may then work up to ten hours per day.
- A task-rated worker may not work more than a total of 55 hours in any week (based on a 40-hour week) to complete the tasks allocated to that worker.

#### **C3.4.11.9 Meal Breaks**

- A worker may not work for more than five hours without taking a meal break of at least thirty minutes duration.
- An Employer and worker may agree on longer meal breaks.
- A worker may not work during a meal break. However, an Employer may require a worker to perform duties during a meal break if those duties cannot be left unattended and cannot be performed by another worker. An Employer must take reasonable steps to ensure that a worker is relieved of his or her duties during the meal break.
- A worker is not entitled to payment for the period of a meal break. However, a worker who is paid on the basis of time worked must be paid if the worker is required to work or to be available for work during the meal break.

#### **C3.4.11.10 Special Conditions for Security Guards**

- A security guard may work up to 55 hours per week and up to eleven hours per day.
- A security guard that works more than ten hours per day must have a meal break of at least one hour or two breaks of at least 30 minutes each.

#### **C3.4.11.11 Daily Rest Period**

Every worker is entitled to a daily rest period of at least eight consecutive hours. The daily rest period is measured from the time the worker ends work on one day until the time the worker starts work on the next day.

#### **C3.4.11.12 Weekly Rest Period**

Every worker must have two days off every week. A worker may only work on his/her day off to perform work which must be done without delay and cannot be performed by workers during their ordinary hours of work ("emergency work").

#### **C3.4.11.13 Work on Sundays and Public Holidays**

- A worker may only work on a Sunday or public holiday to perform emergency or security work.
- Work on Sundays is paid at the ordinary rate of pay.
- A task-rated worker who works on a public holiday must be paid:
  - The worker's daily task rate, if the worker works for less than four hours
  - Double the worker's daily task rate if the worker works for more than four hours.
- A time-rated worker who works on a public holiday must be paid:
  - The worker's daily rate of pay if the worker works for less than four hours on the public holiday.
  - Double the worker's daily rate of pay if the worker works more than four hours on the public holiday.

#### **C3.4.11.14 Sick Leave**

- Only workers who work four or more days per week have the right to claim sick-pay in terms of this clause.
- A worker who is unable to work because of illness or injury is entitled to claim one day's sick leave for every full month that the worker has worked in terms of a contract.
- A worker may accumulate a maximum of twelve days' sick leave in a year.
- Accumulated sick-leave may not be transferred from one contract to another contract.
- An Employer must pay a task-rated worker the worker's daily task rate for a day's sick leave.
- An Employer must pay a time-rated worker the worker's daily rate for a day's sick leave.
- An Employer must pay a worker sick pay on the worker's usual payday.
- Before paying sick-pay, an Employer may require a worker to produce a certificate stating that the worker was unable to work because of sickness or injury if the worker is:
  - Absent from work for more than two consecutive days, or
  - Absent from work on more than two occasions in any eight-week period.
- A medical certificate must be issued and signed by a medical practitioner, a qualified nurse or a clinic staff member authorised to issue medical certificates indicating the duration and reason for incapacity.
- A worker is not entitled to paid sick-leave for a work-related injury or occupational disease for which the worker can claim compensation under the Compensation for Occupational Injuries and Disease Act.

#### **C3.4.11.15 Maternity Leave**

- A worker may take up to four consecutive month's unpaid maternity leave.
- A worker is not entitled to any payment or employment-related benefits during maternity leave.
- A worker must give her Employer reasonable notice of when she will start maternity leave and when she will return to work.
- A worker is not required to take the full period of maternity leave. However, a worker may not work for four weeks before the expected date of birth of her child or for six weeks after the birth of her child, unless a medical practitioner, midwife or qualified nurse certifies that she is fit to do so.
- A worker may begin maternity leave
  - four weeks before the expected date of birth, or on an earlier date
  - if a medical practitioner, midwife or certified nurse certifies that it is necessary for the health of the worker or that of her unborn child; or
  - if agreed to between Employer and worker; or
  - on a later date if a medical practitioner, midwife or certified nurse has certified that the worker is able to continue to work without endangering her health.
- A worker who has a miscarriage during the third trimester of pregnancy or bears a stillborn child may take maternity leave for up to six weeks after the miscarriage or stillbirth.
- A worker who returns to work after maternity leave has the right to start a new cycle of twenty-four months employment unless the EPWP on which she was employed has ended.



### **C3.4.11.16 Family Responsibility Leave**

Workers, who work for at least four days per week, are entitled to three days paid family responsibility leave each year in the following circumstances.

- When the employee's child is born;
- When the employee's child is sick;
- In the event of the death of:
  - The employee's spouse or life partner;
  - The employee's parent, adoptive parent, grandparent, child, adopted child, grandchild or sibling.

### **C3.4.11.17 Statement of Conditions**

- An Employer must give a worker a statement containing the following details at the start of employment
  - the Employer's name and address and the name of the EPWP
  - the tasks or job that the worker is to perform
  - the period for which the worker is hired or, if this is not certain, the expected duration of the contract
  - the worker's rate of pay and how this is to be calculated
  - the training that the worker will receive during the EPWP.
- An Employer must ensure that these terms are explained in a suitable language to any employee who is unable to read the statement.
- An Employer must supply each worker with a copy of these conditions of employment.

### **C3.4.11.18 Keeping Records**

- Every Employer must keep a written record of at least the following:
  - the worker's name and position
  - in the case of a task-rated worker, the number of tasks completed by the worker
  - in the case of a time-rated worker, the time worked by the worker
  - payments made to each worker.
- The Employer must keep this record for a period of at least three years after the completion of the EPWP.

### **C3.4.11.19 Payment**

- An Employer must pay all wages at least monthly in cash or by cheque or into a bank account.
- A task-rated worker will only be paid for tasks that have been completed.
- An Employer must pay a task-rated worker within five weeks of the work being completed and the work having been approved by the manager, or of the Contractor having submitted an invoice to the Employer.
- A time-rated worker will be paid at the end of each month.
- Payment must be made in cash, by cheque or by direct deposit into a bank account designated by the worker.
- Payment in cash or by cheque must take place:
  - at the workplace or at a place agreed to by the worker
  - during the worker's working hours or within fifteen minutes of the start or finish of work
  - In a sealed envelope which becomes the property of the worker.
- An Employer must give a worker the following information in writing:
  - the period for which payment is made
  - the numbers of tasks completed, or hours worked
  - the worker's earnings
  - any money deducted from the payment
  - The actual amount paid to the worker.
- If the worker is paid in cash or by cheque, this information must be recorded on the envelope and the worker must acknowledge receipt of payment by signing for it.
- If a worker's employment is terminated, the Employer must pay all monies owing to that worker within one month of the termination of employment.

### **C3.4.11.20 Deductions**

- An Employer may not deduct money from a worker's payment unless the deduction is required in terms of a law.

- An Employer must deduct and pay to the SA Revenue Services any income tax that the worker is required to pay.
- An Employer who deducts money from a worker's pay for payment to another person must pay the money to that person within the time and other requirements specified in the agreement law, court order or arbitration award concerned.
- An Employer may not require or allow a worker to:
  - repay any payment except an overpayment previously made by the Employer by mistake
  - state that the worker received a greater amount of money than the Employer paid to the worker
  - Pay the Employer or any other person for having been employed.

#### **C3.4.11.21 Health and Safety**

- Employers must take all reasonable steps to ensure that the working environment is healthy and safe.
- A worker must:
  - work in a way that does not endanger his/her health and safety or that of any other person
  - obey any health and safety instruction
  - obey all health and safety rules of the EPWP
  - use any personal protective equipment or clothing issued by the Employer
  - report any accident, near-miss incident or dangerous behaviour by another person to their Employer or manager.

#### **C3.4.11.22 Compensation for Injuries and Diseases**

- It is the responsibility of the employers (other than a Contractor) to arrange for all persons employed on an EPWP to be covered in terms of the Compensation for Occupational Injuries and Diseases Act, 130 of 1993.
- A worker must report any work-related injury or occupational disease to their Employer or manager.
- The Employer must report the accident or disease to the Compensation Commissioner.
- An Employer must pay a worker who is unable to work because of an injury caused by an accident at work 75% of their earnings for up to three months. The Employer will be refunded this amount by the Compensation Commissioner. This does NOT apply to injuries caused by accidents outside the workplace such as road accidents or accidents at home.

#### **C3.4.11.23 Termination**

- The Employer may terminate the employment of a worker for good cause after following a fair procedure.
- A worker will not receive severance pay on termination.
- A worker is not required to give notice to terminate employment. However, a worker who wishes to resign should advise the manager or the Employer in advance to allow the Employer to find a replacement.
- A worker who is absent for more than three consecutive days without informing the Employer of an intention to return to work will have terminated the contract. However, the worker may be re-engaged if a position becomes available of the balance for the 24-month period.
- A worker who does not attend required training events, without good reason will have terminated the contract. However, the worker may be re-engaged if a position becomes available for the balance of the 24-month period.

#### **C3.4.11.24 Certificate of Service**

On the termination of employment, a worker is entitled to a certificate stating:

- the worker's full name
  - the name and address of the Employer
  - the EPWP on which the worker worked
  - the work performed by the worker
  - any training received by the worker as part of the EPWP
  - the period for which the worker worked on the EPWP
- Any other information agreed on by the Employer and worker.

### **C3.4.12 VARIATIONS AND ADDITIONS TO SABS 1200 STANDARDIZED SPECIFICATIONS AND PARTICULAR SPECIFICATIONS**

The following variations and additions to the SABS 1200 Standardized Specifications referred to shall apply to this Contract. The prefix "PS" indicates an amendment to SABS 1200. The prefix "PSA" indicates an amendment to SABS 1200 A, "PSDB" to SABS 1200 DB and so on. The letters and numbers following these prefixes respectively indicate the relevant Standardized Specification and clause numbers in SABS 1200 to which the variation or addition thereto applies.

An asterisk (\*) placed next to a PS Subclause number denotes the inclusion of an additional Subclause for which no equivalent appears in SABS 1200.

The term "project specifications" appearing in any of the SABS 1200 Standardized specifications must be replaced with the term "Scope of Work".

Further to the above it should be noted that where in a specific Standardized Specification reference is made to a Subclause in another Standardized Specification, any amendment or addition to the Subclause referred to, as provided for in the Specification, shall apply. The aforementioned shall also apply with respect to Clauses referred to in a Particular Specification.

**PSA                    GENERAL****PSA 1                SCOPE**

Replace the contents of Clause 1.1, including the notes, with the following:

“1.1 This specification covers requirements, principles and responsibilities of a general nature which are generally applicable to civil engineering construction and building works contracts, as well as the requirements for the Contractor’s establishment on the Site.”

**PSA 2                INTERPRETATIONS**

## PSA 2.3            DEFINITIONS

In the opening phrase, insert the words: “the definitions given in the Conditions of Contract and” between the words “specification” and “the following”.

a)            General

Add the following definitions:

“General Conditions and Conditions of Contract. The General Conditions of Contract specified for use with this Contract as amended in the Contract Data.

Specified As specified in the Standardized Specifications, the Drawings or the Scope of Work. “Specifications” shall have the corresponding meaning.”

c)            Measurement and payment

Replace the definitions for “Fixed charge”, “Time-related charge” and “Value-related charge” with the following:

“Fixed charge. A charge that is not subject to adjustment on account of variations in the value of the Contract Price or the time allowed in the Contract for the completion of the work.

Time-related charge. A charge, the amount of which varies in accordance with the Time for Completion of the Works, adjusted in accordance with the provisions of the Contract.

Value-related charge. A charge, the amount of which varies pro rata with the final value of the measured work executed and valued in accordance with the provisions of the Contract.”

Add the following definitions:

“Schedule. Replace by “Schedule of Rates”

Scheduled. Replace by “Listed in the Schedule of Rates”

Note:

Wherever the term “Schedule of Quantities” is mentioned, it shall be replaced by “Schedule of Rates”.

## PSA 2.4            ABBREVIATIONS

a)            Abbreviations relating to standard documents

Add the following abbreviation :

“CKS: SABS Co-ordinating Specification.”

**PSA 3                MATERIALS**

## PSA 3.1            QUALITY

Where applicable, materials shall bear an official standardization mark.

Add the following:

"Where proprietary materials are specified it is to indicate the quality or type of materials or articles required, and where the terms "or similar approved" or "or approved equivalent" are used in connection with proprietary materials or articles, it is to be understood that the approval shall be at the sole discretion of the Employer's Agent."

**"PSA 3.3\* ORDERING OF MATERIALS**

The quantities set out in the Schedule of Rates have been carefully determined from calculations based on data available at the time of its compilation, but are to be considered as approximate quantities only. Before ordering materials of any kind the Contractor shall be solely responsible for determining, from the Drawings issued or approved by the Employer's Agent for construction purposes, the actual quantities of materials required for the execution of the Works. No liability or responsibility whatsoever shall be attached to the Employer or the Employer's Agent in respect of materials ordered by the Contractor except when ordered in accordance with the Drawings issued or approved by the Employer's Agent for construction purposes."

**PSA 4 PLANT**

**PSA 4.1 SILENCING OF PLANT**

Replace the contents of Clause 4.1 with the following:

"The Contractor's attention is drawn to the applicable regulations pertaining to noise and hearing conservation, framed under the Occupational Health and Safety Act (Act No. 85 of 1993) as amended.

The Contractor shall at all times and at its own cost, be responsible for implementing all necessary steps to ensure full compliance with such regulations, including but not restricted to the provision and use of suitable and effective silencing devices for pneumatic tools and other Plant which would otherwise cause a noise level in excess of that specified in the said regulations.

Where appropriate, the Contractor shall further, by means of temporary barriers, effectively isolate the source of such noise in order to comply with the said regulations."

**PSA 4.2 CONTRACTOR'S OFFICES, STORES AND SERVICES**

Add the following new paragraph before the existing paragraph in Clause 4.2:

"The Contractor's buildings, sheds and other facilities erected or utilised on the Site for the purposes of the Contract shall be fenced off and shall contain all offices, stores, workshops, testing laboratories, toilet facilities, etc. as may be required by the Contractor. The facilities shall always be kept in a neat and orderly condition.

No personnel may reside on the Site. Only night-watchmen may be on the Site after hours."

Delete "and first-aid services" in the second paragraph of Clause 4.2 and add the following:

"The Contractor shall provide on the Site and in close proximity to the actual locations where the work is being executed, one toilet per 15 workmen, which toilets shall be effectively screened from public view and their use enforced. Such toilets shall be relocated from time to time as the location of the work being executed changes, so as to ensure that easy access to the toilets is maintained.

The Contractor shall, where applicable, make all necessary arrangements and pay for the removal of night soil."

**PSA 5 CONSTRUCTION**

**PSA 5.1 SURVEY**

**PSA 5.1.1 Setting out of the Works**

The installed benchmarks shown on the Drawings shall be used by the Contractor for setting out the works.

Add the following paragraph:

"The Contractor shall be required to check and verify, prior to commencement of any construction work, all benchmarks and boundary reference pegs, as shown and detailed on the Drawings. Reference and benchmark pegs disturbed and/or removed during the construction period shall be replaced by a Professional Land Surveyor and the Contractor shall bear the cost of such replacement. Payment to check and verify the reference and benchmark pegs will be made in terms of PSA 8.8.5."

PSA 5.1.2      Preservation and replacement of survey beacons and pegs subject to the Land Survey Act

Delete from the second sentence "Before the commencement . . . . "to" . . . . apparently in their correct positions" and replace with the following:

"Immediately on taking over the site, the Contractor, in consultation and liaison with the Employer's Agent, shall search for all pegs and the Contractor shall compile a list of pegs that are apparently in their correct position."

Replace the third sentence of Clause 5.1.2 with the following:

"At completion of the Contract, the Contractor shall expose and mark all pegs that were listed at the commencement of the construction as being in order and the Contractor shall arrange with a registered Land Surveyor the replacement of pegs that have become disturbed or damaged. The Contractor shall, as a precedent to the issue of the Certificate of Completion, provide to the Employer's Agent, a certificate from the Registered Land Surveyor, certifying that all the pegs listed at the commencement of construction in accordance with the provisions of this Clause, have been checked and that those found to have been disturbed, damaged or destroyed have been replaced in their correct positions, all in accordance with the provisions of the said Act.

The costs of replacement and certification as aforesaid shall be entirely for the Contractor's account, provided always that the Contractor shall not be held liable for the cost of replacement of pegs which:

- (a) cannot reasonably be re-established in their original positions by reason of the finished dimensions of the Permanent Works; and
- (b) the Contractor can prove beyond reasonable doubt and to the satisfaction of the Employer's Agent, were disturbed, damaged or destroyed by others beyond its control, and
- (c) were in close proximity to the work and which would unavoidably be removed, subject to the Employer's Agent approval being given to remove such pegs."

PSA 5.2      WATCHING, BARRICADING AND LIGHTING AND TRAFFIC CROSSINGS

Add the following:

"The Contractor shall comply in all aspects with the requirements of the Occupational Health and Safety Act (Act 85 of 1993), refer also PSA 5.7, PSA 5.9 and PSA 5.10."

PSA 5.3      PROTECTION OF STRUCTURES

Replace: "Machinery and Occupational Safety Act, 1983, (Act No. 6 of 1983)" with: "Occupational Health and Safety Act, 1993 (Act No. 85 of 1993), as amended," and insert the following after "(Act No. 27 of 1956)": "as amended".

PSA 5.4      PROTECTION OF OVERHEAD AND UNDERGROUND SERVICES

Replace the heading and the contents of Clause 5.4 with the following:

"PSA 5.4      LOCATION AND PROTECTION OF EXISTING SERVICES

PSA 5.4.1      Location of existing services

Before commencing with any work in an area, the Contractor shall ascertain the presence and actual position of all services which can reasonably be expected by an experienced and competent Contractor to be present on, under, over or within the Site.

Without in any way limiting its liability in terms of the Conditions of Contract in relation to damage to property and interference with services, the Contractor shall, in collaboration with the Employer's Agent, obtain the most up-to-date plans as are available, showing the positions of services existing in the area where it intends to work.



Neither the Employer nor the Employer's Agent offer any warranty as to the accuracy or completeness of such plans and because services can often not be reliably located from plans, the Contractor shall ascertain the actual location of services depicted on such plans by means of careful inspection of the Site. No excavation may commence until the position of the service at the crossing point has been marked out and verified by an official of the responsible authority.

Thereafter, the Contractor shall, by the use of appropriate methodologies, carefully expose the services at such positions as are agreed to by the Employer's Agent, for the purposes of verifying the exact location and position of the services. Where the exposure of existing services involves excavation to expose underground services, the requirements of Clauses 4.4 and 5.1.2.2 of SABS 1200D (as amended) shall also apply.

The aforesaid procedure shall also be followed in respect of services not shown on the plans but which may reasonably be anticipated by an experienced Contractor to be present or potentially present on the Site.

All services, the positions of which have been determined as aforesaid at critical points, shall henceforth be designated as "Known Services" and their positions shall be indicated by the Contractor on a separate set of Drawings, a copy of which shall be furnished to the Employer's Agent without delay.

As soon as any service which has not been identified and located as described above is encountered on, under, over or within the Site, it shall henceforth be deemed to be a "Known Service" and the aforesaid provisions pertaining to locating, verifying and recording its position on the balance of the Site shall apply. The Contractor shall notify the Employer's Agent immediately should any such service be encountered or discovered on the Site.

Whilst it is in possession of the Site, the Contractor shall be liable for all loss of or damage as may occur to:

- (a) Known Services, anywhere along the entire lengths of their routes, as may reasonably be deduced from the actual locations at which their positions were verified as aforesaid, due cognisance being taken of such deviations in line and level which may reasonably be anticipated; and
- (b) any other service which ought reasonably to have been a Known Service in accordance with the provisions of this Clause;

as well as for consequential damage, whether caused directly by the Contractor's operations or by the lack of proper protection; provided always that the Contractor will not be held liable in respect of damages occurring to services not being Known Services.

No separate payment will be made to the Contractor in respect of any costs incurred in preparing and submitting to the Employer's Agent, the Drawings as aforesaid and these costs shall be deemed included in the Contractor's other tendered rates and prices included in the Contract.

Payment to the Contractor's in respect of exposing services at the positions agreed by the Employer's Agent and as described above will be made under the payment items (if any) as may be provided therefore in the respective sections of the Specifications pertaining to the type of work involved.

#### PSA 5.4.2 Protection during construction

The Contractor shall take all reasonable precautions and arrange its operations in such a manner as to prevent damage occurring to all known services during the period which the Contractor has occupation and/or possession of the Site.

Services left exposed shall be suitably protected from damage and in such a manner as will eliminate any danger arising there from to the public and/or workmen, all in accordance with the requirements of the prevailing legislation and related regulations.

#### PSA 5.4.3 Alterations and repairs to existing services

Unless the contrary is clearly specified in the Contract or ordered by the Employer's Agent, the Contractor shall not carry out alterations to existing services. When any such alterations become necessary, the Contractor shall promptly inform the Employer's Agent, who will either make arrangements for such work to be executed by the owner of the service, or instruct the Contractor to make such arrangements himself.

Should damage occur to any existing services, the Contractor shall immediately inform the Employer's Agent, or when this is not possible, the relevant authority, and obtain instructions as to who should carry out repairs. In



urgent cases, the Contractor shall take appropriate steps to minimise damage to and interruption of the service. No repairs of telecommunication cables or electric power lines and cables shall be attempted by the Contractor, unless approved by the Employer's Agent.

The Employer will accept no liability for damages due to a delay in having alterations or repairs affected by the respective service owners. The Contractor shall provide all reasonable opportunity, access and assistance to persons carrying out alterations or repairs of existing services."

#### PSA 5.7 SAFETY

Replace the contents of subclause 5.7 with the following:

"Pursuant to the provisions of the Conditions of Contract, and without in any way limiting the Contractor's obligations there under, the Contractor shall at his own expense (except only where specific provision (if any) is made in the Contract for the reimbursement to the Contractor in respect of particular items), provide the following:

- (a) Provide to its Employees on the site of the works, all safety materials, clothing and equipment necessary to ensure full compliance with the provisions of the Occupational Health and Safety Act (Act No 85 of 1993) and associated Regulations as amended (hereinafter referred to as the Act) at all times, and shall institute appropriate and effective measures to ensure the proper usage of such safety materials, clothing and equipment at all times; and
- (b) Provide, install and maintain all barricades, safety signage and other measures to ensure the safety of workmen and all persons in, on and around the site, as well as the general public; and
- (c) Implement on the site of the works, such procedures and systems and keep all records as may be required to ensure compliance with the requirements of the Act at all times; and
- (d) Implement all necessary measures so as to ensure compliance with the Act by all subcontractors engaged by the Contractor and their employees engaged on the works; and
- (e) Full compliance with all other requirements pertaining to safety as may be specified in the Contract.

The Employer shall in terms of the Regulations make such inspections on the site, as they shall deem appropriate, for the purpose of verifying the Contractor's compliance with the requirements of the Act. For this purpose, the Contractor shall grant full access to the site of all parts of the site and shall co-operate fully in such inspections and shall make available for inspection all such documents and records as the Employer's representative may reasonably require.

Where any such investigations reveal, or where it comes to the Employer's attention that the Contractor is in any way in breach of the requirements of the Act or is failing to comply with the provisions of this clause, the Employer's Agent shall, in accordance with the provisions of Clause 5.11 of the Conditions of Contract, be entitled to suspend progress on the works or any part thereof until such time as the Contractor has demonstrated to the satisfaction of the Employer, that such breach has been rectified.

The Contractor shall have no grounds for a claim against the Employer for extension of time and/or additional costs if the progress on the works or any part thereof is suspended by the Employer's Agent in terms of this clause, and the Contractor shall remain fully liable in respect of the payment of penalties for late completion in accordance with the provisions of Clause 5.13 of the Conditions of Contract should the Contractor fail to complete the Works on or before the specified due completion date in consequence of the suspension.

Persistent and repeated breach by the Contractor of the requirements of the Act and/or this clause shall constitute grounds for the Employer's Agent to act in terms of Clause 9.2 of the Conditions of Contract and for the Employer to terminate the Contract in accordance with the further provisions of the said Clause 9.2."

#### "PSA 5.9\* MAINTAINING SERVICES IN USE

The Contractor shall take note that he shall not cut off any service in use without the prior approval of the Employer's Agent.

Failure on the part of the Contractor to comply with any of the above provisions will constitute sufficient reason for the Employer's Agent to stop the works until the situation has been remedied, or should he deem it necessary, arrange for the situation to be remedied at the Contractor's cost.

No direct payment will be made for the cost of maintaining services in use. Payment will be deemed to be covered by the rates and sums tendered and paid for the various items of work included under the Contract."

"PSA 5.10\* DEALING WITH AND ACCOMMODATING TRAFFIC

The Contractor shall take note that the existing roads and tracks within and to the Sites, shall remain operational throughout the contract period. To this end the Contractor shall provide and maintain all temporary fences, security, barriers, kerb ramps, signs, markings, flagmen, drums, lighting, personnel and all other incidentals necessary to ensure safe and easy passage of all traffic.

Temporary traffic signs etc. as well as all necessary markings shall be erected and maintained by the Contractor and the number and layout of the traffic signs shall comply with the Site Manual entitled "Safety at Roadworks in Urban Areas", as published by the Department of Transport.

Traffic signs shall have a yellow background with either a red / black border."

"PSA 5.11\* SITE MEETINGS

The Contractor or its authorised agent will be required to attend regular site meetings, which shall normally be held once a month on dates and at times determined by the Employer's Agent, but in any case whenever reasonably required by the Employer's Agent. Unless otherwise indicated in the Contract or instructed by the Employer's Agent, such meetings shall be held at the Contractor's offices on the Site. At such monthly meetings, matters such as general progress on the Works, quality of work, problems, claims, payments, and safety etc, shall be discussed, but not matters concerning the day-to-day running of the Contract.

"PSA 5.12\* PROVIDING ACCESS TO ERVEN AND PROPERTIES

Access to erven and properties along the route of trenches and roads shall be provided by the Contractor at all times. To this end suitable crossings shall be constructed where required.

Temporary crossings shall be in the form of portable bridges, temporary backfill or other approved means and shall be capable of permitting the safe passage of all vehicles and pedestrians. The Contractor shall also be responsible for maintaining crossings and for removing same when they are no longer required.

If as a result of restricted road reserve widths and the nature of the Works the construction of bypasses is not feasible, construction shall be carried out under traffic in order to provide access to the properties.

The Contractor may, with the approval of the Employer's Agent, arrange with the occupiers of the affected properties to temporarily close off a portion of a road, footpath entrance, property access road or other access, provided that the Contractor shall give due notice of the intended closure and its probable duration to the occupiers and shall as punctually as possible re-open the route at the prescribed time. Where possible, roads shall be made safe and re-opened to traffic overnight. Any such closure shall be an arrangement between the Contractor and the occupiers and shall not absolve the Contractor from his obligations under the Contract to provide access at all times. Barricades, traffic signs and drums shall be provided by the Contractor to suit the specific conditions.

No direct payment will be made for the cost of providing access. Payment will be deemed to be covered by the rates and sums tendered and paid for the various items of work included under the Contract."

"PSA 5.13\* PROTECTION OF LIVESTOCK

From the time of the occupancy of the Site until the date of the Completion Certificate the Contractor shall take all measures necessary for the protection and control of livestock on the sections of the properties affected by his operations. He shall provide gates in existing fences cut by him for the purpose of access and control, and where necessary, to store materials and plant and the Contractor shall ensure that all gates are kept closed during such time as they are not actually in use by his traffic.

Where the Contractor cannot make alternative arrangements, the Contractor shall erect temporary fencing where necessary to protect livestock exposed to straying through his operations. The fencing shall be maintained in good order during construction operations and on completion of the work it shall be removed from the Site and all surfaces restored to the satisfaction of the property owner.

Payment for the protection of livestock, including the erection of temporary fences and gates where required, shall be deemed to be covered by the rates and sums tendered and paid for the various items of work included under the Contract.

Claims by property owners for loss of or injury to livestock due to negligence on the part of the Contractor, shall be settled by the Contractor.”

“PSA 5.14\* ENVIRONMENTAL MANAGEMENT

The Contractor shall be required to comply with the Environmental Management Plan (EMP) and Specifications during the Contract period.

Non-compliance with the specifications and EMP, in any way whatsoever, will be adequate reason for suspension of the Works.

The Contractor shall at all times be responsible for full compliance with the specifications and EMP and no extension of time will be considered for delays due to non-compliance with the abovementioned.

**The applicable environmental documents are bound as Particular Specification PB.”**

No direct payment will be made for the cost of complying with the EMP or disruption experienced in attending to the aforementioned. Payment shall be deemed to be covered by the rates and sums tendered and paid for the various items of work included under the Contract.”

“PSA 5.16\* ATTENDANCE ON EME’S

The Contractor shall closely manage and supervise all EME’S and shall manage, guide and assist each EME in all aspects of management, execution and completion of his subcontract. This shall typically include assistance with planning his works, sourcing and ordering of materials, labour relations, monthly measurements and invoicing procedures, etc. The extent and level of such management, guidance and assistance, to be provided by the Contractor shall be commensurate with the expertise of relevant EME and shall be directed at enabling the EME’S to achieve the successful execution and completion of the subcontract.

A provisional sum item shall be provided in the Schedule of Rates (refer to PSA 8.5.2a) in the Main Contract, for allowance of subcontracting work packages for EME’S and the Contractor will be reimbursed under PSA 8.5.2(b) on the basis of a percentage of the value of the subcontracts awarded, for his attendance on the EME subcontractors. This percentage shall allow for:

- All costs incurred for advertising and adjudicating tenders, and for assistance afforded to prospective bidders.
- All administrative, management and supervisory functions associated with the employment of the EME’S.

The Contractor shall be required to appoint an EME Construction Manager who will be responsible to assist EME’S as and when required and shall be reimbursed under PSA 8.12. The EME Construction Manager’s duties are specified in Clause PSA 5.17. Refer also to C3.3.2.”

“PSA 5.17\* EME CONSTRUCTION MANAGER

**Assistance to the EME Subcontractors**

The Contractor shall, in addition to the requirements of Clause 4.4 of the General Conditions of Contract for Construction Works (2015), guide, assist and mentor all eligible potential EME’S wishing to submit tenders, in the proper completion and submission of their particular tenders, including advice and guidance on how to establish rates.

The Contractor shall employ on a full-time basis, a construction manager on the Contract who will manage the EME’S and report on progress to the EME Committee. Such Construction Manager shall be full-time on site and be adequately experienced with EME work and the development thereof and will be subject to the approval of the Employer. The assistance rendered by the Construction Manager, shall *inter alia*:

- (i) be given at a level and to the extent which is commensurate with the expertise and resources of the EME,
- (ii) be given in a manner which is neither prescriptive, dictatorial, nor coercive towards the EME;
- (iii) not be utilized by the Contractor to manipulate the rates and prices submitted, to his advantage, and
- (iv) be given in a manner which does not unfairly prejudice or favour any particular EME.

The EME Construction Manager will after the tendering process work with and manage the EME Subcontractors throughout the Contract. Refer also to C3.3.2.”

**PSA 6 TOLERANCES****"PSA 6.4\* USE OF TOLERANCES**

No guarantee is given that the full specified tolerances will be available independently of each other, and the Contractor is cautioned that the liberal or full use of any one or more of the tolerances may deprive him of the full or any use of tolerances relating to other aspects of the work.

Except where the contrary is specified, or when clearly not applicable, all quantities for measurement and payment shall be determined from the 'authorized' dimensions. These are specified dimensions or those shown on the Drawings or, if changed, as finally prescribed by the Employer's Agent, without any allowance for the specified tolerances. Except if otherwise specified, all measurements for determining quantities for payment will be based on the 'authorized' dimensions.

If the work is constructed in accordance with the 'authorised' dimensions plus or minus the tolerances allowed, the calculation of quantities will be based on the 'authorised' dimensions, regardless of the actual dimensions to which the work has been constructed.

When the work is not constructed in accordance with the 'authorised' dimensions plus or minus the tolerances allowed, the Employer's Agent may nevertheless, at his sole discretion, accept the work for payment. In such cases no payment shall be made for quantities of work or material in excess of those calculated for the 'authorised' dimensions, and where the actual dimensions are less than the 'authorised' dimensions minus the tolerance allowed, quantities for payment shall be calculated based on the actual dimensions as constructed."

**PSA 7 TESTING****PSA 7.1 PRINCIPLES****PSA 7.1.2 Standard of Finished Work Not to Specification**

Insert the words "or checks by an approved laboratory ..." after the words "Where the Employer's Agent's checks ..." in the first line of Clause 7.1.2.

**PSA 7.2 APPROVED LABORATORIES**

Replace the contents of Clause 7.2 with the following:

"Unless otherwise specified in the relevant specification or elsewhere in the Scope of Work, the following shall be deemed to be approved laboratories in which design work, or testing required in terms of a specification for the purposes of acceptance by the Employer's Agent of the quality of materials used and/or workmanship achieved, may be carried out:

- (a) any testing laboratory certified by the South African National Accreditation Systems (SANAS) in respect of the nature and type of testing to be undertaken for the purposes of the Contract;
- (b) any testing laboratory owned, managed or operated by the Employer or the Employer's Agent;
- (c) any testing laboratory established and operated on the Site by or on behalf of the Employer or the Employer's Agent;
- (d) any testing laboratory designated by the Employer's Agent."

**PSA 8 MEASUREMENT AND PAYMENT****PSA 8.1 MEASUREMENT****PSA 8.1.1 Method of measurement, all sections of the Schedule**

Delete the words "and South West Africa".

**PSA 8.1.2 Preliminary and General item or section****PSA 8.1.2.1 Contents**

Replace the contents of item (c) with the following:

"The 'duration of construction' applicable to a time-related item shall be the tendered contract period for the total works Works Order Assignment, plus as applicable, the Civil Engineering Industry Holiday (Dec / Jan) and all gazetted public holidays for the Civil Engineering Industry."

PSA 8.1.2.2 Tendered sums

Replace the contents of this Sub-Clause with the following:

"Except only where specific provision is made in the Specifications and/or the Schedule of Rates for separate compensation for any of these items, the Contractor's tendered sums/month under items PSA 8.3 and PSA 8.4 shall collectively cover all charges for:

- risks, costs and obligations in terms of the Conditions of Contract and of this standardized specification; and
- head-office and site overheads and supervision; and
- profit and financing costs; and
- expenses of a general nature not specifically related to any item or items of the permanent or temporary work; and
- providing such facilities on site as may be required by the Contractor for the proper performance of the Contract and for its personnel, including, but without limitation, providing offices, storage facilities, workshops, ablutions, services such as water, electricity, sewage and rubbish disposal, access roads and all other facilities required, as well as for the maintenance and removal on completion of the works of these facilities and cleaning-up of the site of the Contractor's establishment and reinstatement to not less than its original condition, and
- providing the facilities for the Employer's Agent and his staff as specified in the Contract and their removal from the site on completion of the Contract.
- completion of monthly labour payment schedule forms (Refer to Annexure A for Pro Forma)
- completion of monthly HIV/AIDS Service Provider Report (Refer to Annexure B)."

PSA 8.2 PAYMENT

PSA 8.3 SCHEDULED FIXED-CHARGE AND VALUE-RELATED ITEMS

Replace the entire contents of this subclause with the following:

"The Contractor shall tender a percentage of the value of the Works Order Assignment, excluding VAT, in the Schedule of Rates to cover all fixed-charges and value related establishment costs. The amount tendered and paid shall be full compensation to the Contractor for:

- (i) The initial costs of providing sureties and insurances to cover his compliance with the requirements of the Workmen's Compensation Act, 1941 (Act No. 30 of 1941) and any other initial financing obligations of a preliminary and general nature and maintenance of his whole organisation as established for each Works Order Assignment.
- (ii) The maintenance of all insurances required in terms of the Conditions of Contract or Tender where applicable.
- (iii) Compliance with all general conditions and requirements which are not specifically measured elsewhere for payment in these Contract Documents.

The sum for Preliminary & General items will be measured as a percentage (%) of the value, excluding VAT, of each Works Order Assignment. Payments for Preliminary & General items will be included in each payment certificate, expressed as a percentage of the nett value of the certificate.

The category (a to d below) shall be determined according to the final total value of the Works Order Assignment

- (a) R 0 to R2 000 000 incl. VAT ..... Unit: %

- (b) Over R2 000 00 to R5 000 000 incl. VAT ..... Unit: %
- (c) Over R5 000 000 to R10 000 000 incl. VAT ..... Unit: %
- (d) Greater than R10 000 000 incl. VAT ..... Unit: %

PSA 8.3.1 Establishment of Facilities on the Site

PSA 8.3.1.1 Facilities for Employer’s Agent

- a) One Contract Nameboard ..... Unit: Sum

The sums shall cover the cost of providing, establishing and commissioning on the Site these facilities adequately equipped to allow the work to commence and to proceed to completion as required in terms of the Contract.

PSA 8.3.1.2 Facilities for Contractor (establishing site camp outside depot yard or own base of operations) ..... Unit: Sum

The sums shall cover the cost of providing, establishing and commissioning on the Site for Offices and storage sheds, workshops, ablution and latrine facilities, tools and equipment, water supplies, electric power and communications, dealing with water (see 5.5) and access (see 5.8) adequately equipped to allow the work to commence and to proceed to completion as required in terms of the Contract.

PSA 8.3.2 Removal of Site Establishment..... Unit: Sum

The sums shall cover the cost of the demolition on and the removal from the surface of the Site of all items established in terms of 8.3.1 and shall provide for the making good and the restoring of the Site to the satisfaction of the Employer’s Agent.”

PSA 8.4 SCHEDULED TIME-RELATED ITEMS

Replace the entire contents of this Subclause with the following:

“PSA 8.4.1 Operation and Maintenance of Facilities on Site, for duration of Construction, except where otherwise stated

PSA 8.4.1.1 Facilities for Employer’s Agent

- (a) One Contract Nameboard..... Unit: Sum
- (b) Survey labourers..... Unit: Labourer Month

The facilities provided shall comply with the applicable requirements of SABS 1200 AB and PSAB

Payment for the provision of survey labourers will be made pro-rata the period the labourers are provided.”

PSA 8.4.1.2 Facilities for Contractor ..... Unit: Sum

The sum shall cover the Contractor’s costs for site rentals, repairs to and depreciation of buildings, furniture, tools and equipment, the storage and distribution of fuels and lubricants, water, electricity, communications, access and sanitation, and the wages of staff operating and maintaining these facilities in accordance with the contract.”

“PSA 8.4.6\* Compensation in terms of Subclause 5.12.2.4 and Clause 9 of the Conditions of Contract for delays incurred:

- (a) Plant..... Unit: Sum per working day
- (b) Labour..... Unit: Sum per working day
- (c) Supervision ..... Unit: Sum per working day
- (d) Other services, facilities etc. not covered by  
(a), (b) and (c)..... Unit: Sum per working day

The sum tendered for each item shall cover the full and final standing cost per day of delaying the specified resource or facility and no additional compensation shall apply, notwithstanding any provisions to the contrary in the contract documents, or in respect of any extension of time granted in relation to the circumstances described in Subclauses 5.12.2.4 and 9 of the Conditions of Contract.



For the purposes of calculating the total delay, a working week shall be held to consist of five working days and a working day 9 hours.

Payment for the partial standing of any of the scheduled resources for a day or part thereof, or the standing of a complete resource for a part day, will be made pro-rata in proportion to an appropriate factor assessed by the Employer’s Agent.

The amount by which compensation for delays is adjusted shall be subject to the contract price adjustment formula as defined in the Conditions of Contract.

This payment item shall only apply to delays which in the opinion of the Employer’s Agent are due to the circumstances described in Subclauses 5.12.2.4 and 9 of the Conditions of Contract. No Payment will be made for any salary related or other internally caused strikes. The cost of delays incurred for all other circumstances shall be treated as provided for in the Conditions of Contract.

The provision of this Clause shall in no way prejudice the right of either the Employer or the Contractor to determine the Contract in terms of the provisions of Clause 9 of the Conditions of Contract.

The Contractor shall take note that no payment will be considered for any additional cost incurred in protecting his plant and site establishment, as well as for costs incurred in respect of damage to constructional plant and equipment."

Replace the heading and contents of Clause 8.5 with the following:

“PSA 8.5           SUMS STATED PROVISIONALLY BY THE EMPLOYER’S AGENT

PSA 8.5.1        Works Executed by the Contractor..... Unit: Prov Sum

The Contractor will be reimbursed in substitution of the Provisional Sums (if any) allowed in the Schedule of Rates for work to be executed by the Contractor, in the amounts determined in accordance with the provisions of Clause 6.6 of the Conditions of Contract.

PSA 8.5.2        Works Executed and performed by the Selected Subcontractors in Consultation with the Employer

(a)                Work to be executed and performed by the Selected Subcontractor in Consultation with the Employer.....Unit: Prov Sum

(b)                Overheads, charges and profit on item (a) above.....Unit: % or Sum

Sub-items (a) and (b) will be provided in the Schedule of Rates for each different Selected Subcontract included in the Contract.

The Contractor shall be reimbursed under sub-item (a), in substitution of the respective Provisional Sums (if any) allowed in the Schedule of Rates, the amounts actually paid or payable by the Contractor to the respective Selected Subcontractors, in accordance with the provisions of Clauses 4.4.3 and 6.6 of the Conditions of Contract.

The Contractor shall be paid under sub-item (b), either:

(a)                where the unit of measurement for sub-item (b) was specified as being a percentage, the respective percentage, as stated by the Contractor in its Tender, of the amount certified by the Employer’s Agent for payment under the related sub-item (a), all in accordance with the provisions of Clause 6.6.1.2.1 of the Conditions of Contract : or

(b)                where the unit of measurement for sub-item (b) was specified as being a Lump Sum, an amount which is in the same proportion to the amount certified for payment under sub-item (a) and the tendered Lump Sum is to the amount of the Provisional Sum stated under sub-item (a) ;

provided always that where the Contractor has failed for any reason, to insert a percentage or Sum (as applicable) for sub-item (b) in its tender, or where no provision was made in the Tender Documents for bidders to make any such entry, the Contractor will, in accordance with the provisions of Sub-clause 6.6.1.2.2, be paid an amount equal to SEVEN AND ONE HALF PERCENT (7½%) of the amount actually certified by the Employer’s Agent for payment under sub-item (a).



The percentage or sum (as applicable) paid under sub-item (b) as aforesaid, shall be deemed to include for full and final compensation to the Contractor for all costs as may be incurred and all charges and profits associated with the engagement, supervision, administration and management of the Nominated Subcontractor and in fulfilling its obligations under the contract as the principal Contractor."

**PSA 8.5.3\* Provision of Security Supervision**

- (a) Provision of Security Supervision..... Unit: Prov Sum
- (b) Overheads, charges and profit on item (a) above..... Unit: %

The Contractor is to satisfy in conjunction with the Employer’s Agent with the level of security required (listed below) for each work package if required. Security provision will only be during working hours. The Employer’s Agent nor the Client will be liable for the loss due to a security supervision-related incident. Once the level is agreed upon the Contractor will supply three (3) quotations for this level of security for the approval of the Employer’s agent or his/her representative.

SECURITY TYPE	DESCRIPTION
Security Level 1 (Grade D)	Access control and visibility security provision in a low-risk area with no weapons.
Security Level 2 (Grade C)	Security of the site in a high-risk area with a guard dog.
Security Level 3 (Grade B)	Security of the site in a very high-risk area with a guard dog and weapon.

Replace Clause 8.6 with the following:

**“PSA 8.6 PRIME COST ITEMS**

**PSA 8.6.1 Prime Cost Sums**

- (a) Description of Item to which Prime Cost Sum Applies ..... Unit: PC Sum
- (b) Charge Required by Contractor on Sub-item (a) above..... Unit: %

Sub-items (a) and (b) will be provided in the Schedule of Rates for each different item to which a Prime Cost Sum applies.

The Contractor shall be reimbursed under sub-item(s) (a) in substitution of the respective Prime Cost Sums included in the Contract, the actual price(s) paid or payable by him in respect of the goods, materials or services supplied, but excluding any charges for the Contractor’s labour, profit, carriage, establishment or other charges related to such goods, services or materials.

The Contractor shall be paid under sub-item (b), the respective percentage, as stated by the Contractor in its Tender, of the amount certified by the Employer’s Agent for payment under the related sub-item (a). The percentages tendered by the Contractor for each respective sub-item (b) included in the Schedule of Rates shall be deemed to in full and final compensation to the Contractor in respect of any charge by the Contractor for labour, carriage profit, establishment and for any other charges related to the goods, services or materials supplied under the related sub-item (a).

If the Contractor shall have omitted within its Tender to insert a tendered percentage under sub-item (b), or tendered a zero percentage, the Contractor’s tendered rate for sub-item (b) shall be deemed to be zero and the Contractor shall not be entitled to any payment under sub-item (b).”

**Note:**

1. Only payments for successful test will be made under the Prime Cost Sum provided in the Schedule of Rates for “additional acceptance control testing by the Employer’s Agent”.
2. The Contractor is responsible for the cost of process control testing. Payment in terms of the above will only be made for acceptance control testing ordered by the Employer’s Agent.

3. On successful completion of a formal training course the Contractor will pay 80% of the direct training costs for which he will be reimbursed under this item. The EME Subcontractor will be liable for 20% of the direct costs and 100% of the indirect costs. Indirect costs include travel costs from site to the training facilities as well as meals and associated costs which will be incurred to attend the training. Should the Subcontractor not successfully complete the course he will be liable for 100% of the direct costs and 100% of the indirect costs for the specific course.”

“PSA 8.7 DAYWORK

Add the following:

“To ensure that the plant is achieving a reasonable output of work, the Employer’s Agent’s personnel will randomly monitor and measure work produced. Poor performance of any item of plant will be noted by the Employer’s Agent and certain reductions in payment may be applied.

Furthermore, should the performance of a machine be poor, or persistently break down, the Employer’s Agent may order that it be replaced, all at the cost of the Contractor.”

PSA 8.8 TEMPORARY WORKS

PSA 8.8.2 Dealing with Traffic

Delete the entire Clause. The provision of PSA 5.10 shall apply. Refer also PSA 5.2, PSA 5.3, PSA 5.7 and PSA 5.10. Payment for Dealing with Traffic shall be under PSDB 8.3.7.”

PSA 8.8.4 Existing services

Replace the heading of paragraph (c) with the following:

“(c) Excavate by hand in soft material to expose existing services .....Unit: m<sup>3</sup>

Add the following:

“The rate tendered for (c) shall further cover the cost of backfilling the excavation with excavated material compacted to 90% of modified AASHTO maximum density, loading, transporting within a free haul distance of 0,5 km and disposing of surplus material as directed, keeping the excavation safe, dealing with water, protecting the exposed services, and any other operation necessary to complete the work.

No distinction will be made between the various types of services to be exposed, or the depths to which excavations are taken.

Excavation in excess of that authorised will not be measured for payment.”

“PSA 8.8.7\* Compliance with the occupational health and safety act (Act 85 of 1993) and all relevant and applicable regulations, especially the construction regulations, 2014 as promulgated on 7 February 2014 under section 43 of the occupational health and safety act (Act 85 of 1993), as amended from time to time, for the duration of the contract

- (a) Contractor .....Unit: Month
- (b) Subcontractors (own) ..... Unit: Month
- (c) Subcontractors (EME) ..... Unit: Month

The tendered rates shall include full compensation to the Contractor for compliance with all the requirements of the OHS Act and the Construction Regulations 2014 at all times, as described in the Scope of Work and Employer’s health and safety specification (Refer Particular Specification PC). The successful bidder shall provide the Employer’s Agent with a complete breakdown of this tendered sum, if so required.

The Contractor shall note that all obligations contained in the Act, Regulations and Employers health and safety specification shall be included in this item. No additional claims will be considered; neither will an extension of time be considered for delays due to non-compliance with the Contractor’s health and safety plan.”

"PSA 8.8.8\* Miscellaneous Items

An item which, in the payment clause column of the Schedule of Rates, refers to this clause, will be measured in the unit scheduled.

The sum or rate for such item shall cover the cost of all materials, labour and plant required to execute and complete the work as specified, described in the Schedule of Rates or shown on the drawing(s)."

PSA 8.9\* RE-ESTABLISHMENT..... Unit: No

The Employer may need to temporarily suspend the contract to suit his budgeting requirements. This is unlikely, and if necessary it will not be a regular occurrence.

The unit of measurement will be number of re-establishment events. The rate shall cover all Contractors' costs associated with the removal of the site crews from the site and return and re-establishment on site when the suspension is lifted.

PSA 8.10\* EMERGENCY RE-LOCATION..... Unit: No

The Employer will, from time to time, require the Contractor to carry out sewer infrastructure rehabilitation using trenchless technologies within the site boundaries within a 24 hour period. This will typically be in the case of an emergency such as a pipe collapse or blockage etc.

The unit of measurement will be the number of relocations ordered by an Employer's Agent. The rate shall include all the Contractors costs associated with the temporary withdrawal from the current trenchless rehabilitation of sewer infrastructure, re-location of the site crews to the emergency area (which will be within the site boundary), establishment at the emergency area, withdrawal from the emergency area and re-establishment at the current trenchless rehabilitation of sewer. The trenchless rehabilitation of the sewer at the emergency area will be measured elsewhere.

PSA 8.11\* MARK-UP FOR AFTER HOURS CALLOUT..... Unit: %

From time to time, the Municipality may require the assistance of annual contractors in repairing damaged infrastructure, especially when an emergency situation arises. If instructed by the Employer's Agent, or any authorised Municipal official, to assist after-hours, the Contractor will be reimbursed at daywork rates for the resources deployed during the callout. A mark-up according to clause 6.5.1.2.3 of the Conditions of Contract will be applied to the daywork rates, which will cover all additional expenses incurred by the Contractor, such as overtime payments to staff, additional travelling costs and any other incidental costs incurred.

"PSA 8.12\* EME Construction Manager .....Unit: Month

The Employer will, for different work packages require that work be subcontracted to black owned companies registered in the Nelson Mandela Bay Municipality's Supplier Data Base to expedite the objectives of the Integrated Development Plan and Black Economic Empowerment. The Contractor shall employ a Construction Manager who will manage the EME's and report on progress to the EME Committee throughout the Contract.

The rate tendered shall cover full compensation to the Contractor to employ a EME Construction Manager on a full-time basis for the duration of the work package required. Refer PSA 5.17 and C3.3.2."

**PSAB      ENGINEER'S OFFICE****PSAB 3      MATERIALS**

## PSAB 3.1      NAMEBOARDS

Delete: "The standard board of the South African Institution of Civil Engineers" and replace by "the standard nameboard of the Engineer's Department, in accordance with Drawing PSA 2 of Standard Details July 2007".

Add: "In addition, the Contractor shall provide and erect two Identity Boards in accordance with Drawing PSA 3 of Standard Details July 2007". They shall be placed and moved, as directed by the Employer's Agent's Representative.

## PSAB 3.2      OFFICE BUILDING(S)

An on-site office for the Employer's Agent is not required. Contract meetings will be held in the Contractor's office or other suitable venue.

**PSAB 4      PLANT**

## PSAB 4.1      TELEPHONE

A telephone will not be required for the Employer's Agent.

## "PSAB 4.2\*      ELECTRONIC EQUIPMENT

The Employer's Agent will provide various items of electronic equipment for the exclusive use by the Employer's Agent and his site staff, to assist in the administration of the Contract, for the duration of construction. The equipment may include a digital camera(s), computer(s), software, printer(s), GPS, cellphones and related consumables.

The equipment shall remain the property of the Employer's Agent at all times, including upon completion of construction and the Contractor shall have no obligation other than the payment in terms of clause 8.6 of SABS 1200 and PSA 8.6."

**PSAB 5      CONSTRUCTION**

## PSAB 5.1      NAMEBOARDS

Replace the contents of this Clause with the following:

"The Contract Nameboards shall be erected within fourteen days of the Commencement Date and shall be placed where ordered. Any damage to this board shall be repaired within seven days of a written instruction issued by the Employer's Agent.

Further to the above the Contractor will not be allowed to erect more than two of his own nameboards in the area of the Works. The position of these shall be agreed to by the Employer's Agent. No payment will be made for the supply, erection or maintenance of the Contractor's nameboards and the Employer's Agent reserves the right to order the removal of the nameboards if not properly maintained.

All nameboards shall be removed within 7 days of the issue of the "Certificate of Completion".

## PSAB 5.5      SURVEY ASSISTANTS

A survey assistant will be required from time to time to assist the Employer's Agent Representative.

**PSAB 8      MEASUREMENT AND PAYMENT**

Delete the contents of this Clause. The appropriate measurement and payment clauses have been included under Clause 8 of SABS 1200 A and PSA.

**PSC                    SITE CLEARANCE**
**PSC 3                    MATERIALS**

## PSC 3.1                DISPOSAL OF MATERIAL

Delete the first two sentences of this clause and replace with:

“Debris arising from clearing and grubbing or from the demolition of structures on site shall be removed by the Contractor and disposed of at the designated spoil site as indicated under C3.4.5.4.

All transport costs and fees to be paid at the tipsite shall be included in the rates tendered for site clearance.”

**PSC 4                    PLANT**

 “PSC 4.2\*              Flow control equipment

The Contractor shall have a range of flow control equipment to be able to block pipe diameter from 100mm – 600mm diameter. He shall also provide suitable pumping equipment in event of need for overpumping. Refer PSC 5.10.”

**PSC 5                    CONSTRUCTION**

## PSC 5.1                AREAS TO BE CLEARED AND GRUBBED

Add the following:

“Notwithstanding the above, the Employer’s Agent may, where particular areas are scarcely vegetated, order that the clearing and grubbing operation be totally or partially omitted, in which case no payment will be made under this section.

Payment will then only be made for excavation included under the relevant earthworks section.”

## PSC 5.5                RECLEARING OF VEGETATION

Add the following:

“Except if otherwise agreed, where areas have to be recleared on the written instruction of the Employer’s Agent, such reclearing shall be carried out at the Contractor’s own cost and the Contractor is advised therefore, not to clear areas at such an early stage that reclearing may become necessary.”

## PSC 5.6                CONSERVATION OF TOPSOIL

Add the following:

“Conservation of topsoil, together with grass, roots and chipped mulch shall be applicable. Stockpiling of topsoil will be allowed on Site in specific locations indicated by the Employer’s Agent. Topsoil shall not be stockpiled higher than 2,0m. Care shall be exercised to prevent the compaction of topsoil in any way especially by vehicles travelling over such material.”

## “PSC 5.9\*              TEMPORARY BYPASS PUMPING

 PSC 5.9.1\*            Scope

During various phases of work, it will be necessary to construct and maintain temporary bypass sewers to maintain continuous and reliable wastewater flow in all pipes, including individual service connections. Various phases of the work that shall require the implementation of temporary bypass sewers include, but are not limited to, connections of new sewers to existing sewers.

The Contractor shall construct and maintain all temporary bypass sewers and be responsible for all bypass pumping of sewage that may be required to prevent backing up of sewage and allow appropriate conditions for proper inspection, rehabilitation, replacement or reconnections to existing sewers. The Contractor shall immediately remove and dispose of all offensive matter spilled during the bypass pumping at his own expense.

The Contractor shall also be responsible for paying any fines imposed as a result of spills or overflows that occur as a result of the bypass pumping operations.

The Contractor shall provide a redundant bypass pump, intake and discharge conduit, and other equipment necessary to provide continuous wastewater flow and prevent the backing up of sewage in the case of emergencies at all times.

Primary bypass pumps shall be silenced when used in residential settings or areas where excessive noise levels would create a disturbance. Redundant bypass pumping does not have to be critically silenced.

PSC 5.9.2\*     Submittals

The Contractor shall submit to the Employer's Agent a schedule to complete the Work. It will include the sequencing and coordination of connections to existing sewers and testing of existing sewers, and the handling of wastewater flow during construction. The schedule of work shall also be reviewed and approved by the Employer's Agent.

The design, installation, and operation of the temporary pumping system shall be the Contractor's responsibility. The Contractor shall either demonstrate, or employ the services of a subcontractor who can demonstrate, to the Employer's Agent that he specializes in the design and operation of temporary bypass pumping systems.

The Contractor shall prepare a specific, detailed description of the proposed pumping system (Bypass Pumping Plan). The Bypass Pumping Plan shall be submitted and approved prior to the mobilization of any of the equipment included in the Bypass Pumping Plan. The Bypass Pumping Plan shall outline all provisions and precautions to be taken by the Contractor regarding handling of existing wastewater flows. This Bypass Pumping Plan must be specific and complete, including such items as schedules, locations, elevations, capacities of equipment, materials, and all other incidental items necessary and/or required to ensure proper protection of the facilities, including protection of the access and bypass pumping locations for damage due to the discharge flows, and compliance with the requirements and permit conditions specified herein. No Construction shall begin until all provisions and requirements have been reviewed and accepted by the Employer's Agent. The plan shall include but not limited to the following details:

1. Staging areas for pumps.
2. Sewer plugging method and types of plugs.
3. Size and location of manholes or access points for suction and discharge hose or piping.
4. Size of pipeline or conveyance system to be bypassed.
5. Number, size, material, location and method of installation of suction piping.
6. Number, size, material, location and method of installation of discharge piping.
7. Bypass pump sizes, capacities, and number of each size to be provided onsite including all primary, secondary, and spare pumping units.
8. Calculations of static lift, friction losses, and flow velocity (pump curves showing pump, operating range shall be submitted).
9. Downstream discharge plan.
10. Method of protecting discharge manholes or structures from erosion and damage.
11. Thrust and restraint block sizes and locations. Provide the details necessary to demonstrate the integrity of all suction and discharge piping including piping and fittings associated with all primary and secondary pumping units.
12. Sections showing suction and discharge pipe depth, embedment, select fill and special backfill.
13. Method of noise control for each pump and any additional equipment that is included in the Bypass Pumping Plan.
14. Any temporary pipe supports and anchoring requirements.
15. Access plans to all bypass pumping locations indicated on the drawings.
16. Calculations for selection of bypass pumping pipe size.
17. Schedule for installation of and maintenance of bypass pumping lines.
18. Plan indicating location of bypass pumping pipe locations.
19. Emergency plan for adverse weather and flooding for various phases of the Work.
20. Contractors plan for providing continuous monitoring of the bypass pumping operation as well as the monitoring persons' qualifications.

PSC 5.9.3\*     Bypass pumping of flow in existing sewers

The Contractor shall supply pumps, conduits, power, and other equipment to divert the flow of sewage around the section in which Work is to be performed. The bypass system shall be of sufficient capacity to handle the



wastewater flows in the table located at the end of this section. It is the intent of these Specifications to require the Contractor to establish adequate bypass pumping as required regardless of the flow condition.

All bypass pumping piping shall be HDPE or similar approved and conform to the following requirements:

1. All polyethylene (HDPE) pipes shall meet the requirements of ASTM F714. DR rating of the pipe shall be sufficient to withstand the pressure and leakage test outlined below.
2. HDPE Pipe shall be furnished in standard laying lengths.
3. Joining system: The HDPE pipe shall be joined with butt, heat fusion joints. All joints shall be made in strict compliance with the manufacturer's recommendations and ASTM 2657. Where required, flange connections, mechanical joint connections and butt connections using bolted mechanical couplers shall be provided from a pipe stub with a polyethylene and steel stiffener. Flanged connections shall be provided from a pipe stub and a steel back-up flange. Back flanges shall be primed and painted in corrosion protected paint. Quick connect couplings will not be permitted on HDPE bypass piping.
4. HDPE fittings shall be fully pressure rated to match the pipe DR pressure rating. All fittings shall be moulded or fabricated by the same manufacturer as the pipe. HDPE fittings shall be joined using butt, heat fusion and/or electrofusion. Adhesives and solvent cements shall not be permitted.

The Contractor shall perform leakage and pressure tests of the bypass pumping discharge piping using clean water prior to the actual operation. The pressure and leakage test shall be conducted at one-and-a-half times the maximum pressure the system will experience based on the approved Bypass Pumping Plan for a period of two hours. No leakage is permitted during this test. The Employer's Agent will be given 24 hours' notice prior to testing. In addition, the Contractor shall demonstrate that the pumping system is in good working order and is sufficiently sized to successfully handle flows by performing a test run for a period of 24 hours prior to beginning the Work.

Each bypass pumping operation shall include the components and systems to accomplish the bypass in accordance with these Specifications.

The Contractor shall provide on-site manual oversight of all bypass pumping operations 24 hours per day, 7 days per week when the bypass pumping system is in operation.

Flows from private, commercial, and industrial users shall be handled by the Contractor during the Work without interruption.

The Contractor shall be required to repair, at his own expense, any damage to public or private property caused by his operations.

Should damage of any kind occur to the existing sewers, the Contractor shall, at his own expense make repairs to the satisfaction of the Employer's Agent.

The Contractor shall immediately notify the Authority should a sanitary sewer overflow (SSO) occur and take the necessary action to clean up and disinfect the spillage to the satisfaction of the Authority and/or other governmental agency. If sewage is spilled onto public or private property, the Contractor shall wash down, clean up, and disinfect the spillage to the satisfaction of the property owner, Authority, and/or other governmental agency.

The Contractor shall not be permitted to overflow, bypass, pump or by any other means convey drainage to any land, street, storm drain or water course.

The Contractor shall cease bypass pumping operations and return flows to the new and/or existing sewer when directed by the Owner. During bypassing, no wastewater shall be leaked, dumped, or spilled in or onto any area outside the existing wastewater system. When bypass operations are complete, all bypass piping shall be flushed with fresh water and drained into the wastewater system prior to disassembly.

The Contractor must take care to prevent damage to existing structures. Discharge piping to gravity sewer systems shall be designed in such a manner as to prevent discharge from contacting manhole walls or benching and full discharge shall go into downstream pipe with as minimal turbulence as possible. The Contractor is responsible for any damage to manholes. It may be necessary to remove the manhole cone to provide sufficient space for the bypass piping. If this is required, the Contractor shall be responsible for any damage to existing manhole components.

The Contractor shall establish adequate bypass pumping adherent to the conditions above and anticipate severe weather conditions and increases in peak flows during rain events.



The 24-hour monitoring person shall be properly trained, experienced, and mechanically qualified such that they can quickly and effectively address any potential emergency and non-emergency situations associated with the pumps and bypass pumping system that must remain in operation for an extended period.”

**“PSC 5.10\*      CLEANING OF SEWERS**

The Employer’s Agent shall approve the choice of cleaning methods for different circumstances.

The apparatus and methods used by the Contractor to clean sewers shall be designed in such a way as not to cause damage to pipes or manholes. The Contractor shall repair any damaged caused during the cleaning process to the satisfaction of the Employer’s Agent at his own expense.

Sewers may be cleaned using either the dredging method or by jetting or a combination of the two methods.

For pipe bursting the Contractor must ensure that no foreign objects, such as rocks, bricks or stones, are present in the line. These objects could impact on the success of the pipe bursting operation by creating point loads on the newly installed HDPE pipe. Simple removal of these objects by wire brush or squeegee must be allowed for in the pipe bursting rate. Roots, fat, sand, etc., do not have to be removed.

The cleaning of sewers will be included in the pipe lining rate.”

**PSC 8              MEASUREMENT AND PAYMENT**

**PSC 8.2            PAYMENT**

**PSC 8.2.1        Clear and grub**

Replace the first line with the following:

“The areas designated by the Employer’s Agent to be cleared and grubbed will be measured in square metre or to the nearest square metre or,”

Delete “(except where 8.2.9 is applicable)” in the seventh line of this Clause.

Add the following:

“The tendered rate shall also cover the cost of loading, transporting and disposing of all rubble and other unwanted debris encountered in road reserves or along service routes.”

Replace the heading of subclause 8.2.5 with the following:

“PSC 8.2.5        Take down and re-erect existing fences.....Unit: km”

Add the following to subclause 8.2.5:

“The rate shall further cover the cost to reinstate the fences to their original status, as well as for all new material required in so doing.”

**PSC 8.2.9        Transport material and debris to unspecified sites and dump**

Delete this subclause.

Notwithstanding the fact that a disposal site will not be designated by the Employer’s Agent, the transportation of all material and debris generated by any clearing and grubbing operations, including the demolishing of structures, will not be measured for payment.”

“PSC 8.2.10\*    Remove and dispose of existing kerbing and concrete channelling.....Unit: m

The rate tendered shall cover the provision of all labour and equipment necessary to remove and dispose of existing kerbing and concrete channelling.”

“PSC 8.2.11\*    Saw-cut asphalt surfacing.....Unit: m

The rate tendered shall cover the provision of all labour and equipment to saw-cut asphalt surfacing.”

“PSC 8.2.12\* Remove and dispose of asphalt surfacing.....Unit: m<sup>2</sup>

The rate tendered shall cover the provision of all labour and equipment necessary to remove and dispose of asphalt surfacing, regardless of volume (saw-cutting will be compensated for under item PSC 8.2.11).”

“PSC 8.2.13\* Remove and dispose of existing sewer pipes.....Unit: m

The rate tendered shall cover the provision of all labour and equipment necessary to remove and dispose of sewer pipes, at an approved spoil site, after it has been exposed.

The cost to excavate, backfill and re-instatement will be measured for payment elsewhere.”

“PSC 8.2.14\* Re-instate fences using new materials.....Unit: m

Re-instate fences using new materials in positions of the taken down fences in accordance with manufacturer’s instructions/specifications complete with all ancillaries, gates, etc. as required for the different fences scheduled.”

“PSC 8.2.15\* Temporary Bypass pumping..... Unit: day

The Contractor shall provide for adequate flow control measures and equipment including, but not limited to, the required pumping and bypassing of all sewage flows entering a specific pipe size. This will include the provision and the maintenance of all plant, equipment and labour for the duration of the installation procedure.

The unit of measurement shall be the number of pro-rata days a pipeline is blocked off. Separate items will be scheduled for each diameter, or range of diameters, of pipe blocked. The rate shall include for the provision, establishment, operation, maintenance and removal on completion of all plant, equipment, materials, pipework up to a maximum of 100m and labour required for the temporary overland pumping of sewage between manholes. The rate shall further cover compliance with PSC 5.9.”

The tendered rate shall include full compensation for providing suitable plugs to seal the pipe at the manhole, dealing with the flow, labour, dealing with traffic and all other related costs for blocking the sewer to allow the CCTV inspection to take place. No additional compensation will be paid in this regard over and above the rate tendered for this item.

“PSC 8.2.16\* Relocate temporary bypass pumping equipment and pipework to new site .....Unit: No

The unit of measurement shall be the number of times the bypass equipment is ordered to be relocated to a new site. The rate shall include for the relocation and re-establishment of all plant, equipment, materials and pipework necessary for bypass pumping to the new site.”

“PSC 8.2.17\* Cleaning of sewers ..... Unit : m

The rate shall include for all materials, plant, equipment, tools and labour necessary for the complete cleaning of sewers to allow for the installation of the new liner. The rate shall further cover compliance with PSC 5.10.”

“PSC 8.2.18\* Remove topsoil to nominal depth of 150 mm, stockpile and maintain .....Unit: m<sup>3</sup>

Replace the heading and contents of subsubclause 8.2.10 with the following:

The rate shall cover the cost of removing the topsoil where ordered, together with such vegetation and small roots as may occur within the specified depth, for loading, transporting to designated area on site, for stockpiling, for maintaining and wetting (dust control) the stockpile for the full duration of the Contract.”

## **PSD                    EARTHWORKS**

### **PSD 2                INTERPRETATIONS**

#### PSD 2.1            SUPPORTING SPECIFICATIONS

Replace Clause 2.1.2 with the following:

"PSD 2.1.2: Any of the other SABS 1200 Specifications may form part of the Contract Documents."

#### PSD 2.3            DEFINITIONS

Replace the word and the definition for "borrow" with the following:

**"Borrow material:** Material, other than material obtained from excavations required for the Works, obtained from sources such as borrow pits or the authorised widening of excavations. 'Borrow' shall have a corresponding meaning."

Replace the definition for "specified density" with the following:

**"Specified density:** The specified dry density expressed as a percentage of modified AASHTO dry density."

Replace the definition for "stockpile" with the following:

**"Stockpile** (verb): The process of selecting and, when necessary, loading, transporting and off-loading material in a designated area for later use for a specific purpose."

Add the following definitions:

**"Commercial Source:** A source of material provided by the Contractor, not the Employer, and including any borrow pit, provided by the Contractor.

**Fill:** An embankment or terrace constructed of material obtained from excavations or borrow pits.

**Fill** (material): Material used for the construction of an embankment or terrace.

**Roadbed:** The natural in situ material on which the fill, or in the absence of fill, the pavement layers, are constructed."

### **PSD 3                MATERIALS**

#### PSD 3.1            CLASSIFICATION FOR EXCAVATION PURPOSES

##### PSD 3.1.1        Method of Classifying

Add the following:

"The classification of material other than 'soft excavation' shall be agreed upon before excavation may commence.

The Contractor shall immediately inform the Employer's Agent if and when the nature of the material being excavated changes to such an extent that a new classification is warranted for further excavation. Failure on the part of the Contractor to advise the Employer's Agent in good time shall entitle the Employer's Agent to reclassify, at his discretion, such excavated material."

##### PSD 3.1.2        Classes of excavation

Notwithstanding the provisions of this subclause no distinction will be made between soft and intermediate excavation. All excavation, other than in hard rock and boulder excavation, shall for measurement and payment purposes be classified as soft excavation.

All materials encountered in any excavation for any purpose including restricted excavation will be classified as follows:

(a) Hard rock excavation

Hard rock excavation shall be excavation in material (including undecomposed boulders exceeding 0.17 cubic metres in individual volume) that cannot be efficiently removed without blasting, wedging and splitting, or hydraulic hammers.

This classification includes materials such as:

- solid unfractured rock occurring in bulk
- solid ledges thicker than 200mm
- igneous rock intrusions
- cemented sedimentary rocks.

(b) Soft excavation

Any material which can be removed by bulldozers or backhoes, shall be classified as soft excavation.

Soft excavation shall be material not falling into the category of hard rock excavation.

PSD 3.2.3 Material Suitable for Backfill or Fill against Structures

Replace the contents of this sub-clause with the following:

"Material used for backfill behind structures shall generally be the material excavated, subject to the following conditions:

- (a) The material shall not contain an excessive number of stones retained on a 50 mm sieve; and
- (b) The material shall not contain large clay lumps that do not break up under the action of the compaction equipment; and
- (c) The liquid limit of the material shall not exceed 40, neither shall the PI exceed 18.
- (d) The minimum compaction shall be 93% of modified AASHTO maximum density."

## PSD 3.3 SELECTION

PSD 3.3.1 General

Replace the second paragraph with the following:

"The Contractor shall deal selectively with materials from all excavations to ensure that no acceptable backfill or bedding material is contaminated by material unfit for use. No additional payment shall be made in this regard and all costs related to the above selection process shall be included in the applicable payment items. Should useful material be contaminated to such an extent that it is regarded as unfit for use the Contractor shall at his own cost dispose of this material and replace it with material of an equivalent standard to the acceptable in situ material."

PSD 3.3.2 Backfilling and embankments

With reference to the last line of this subclause the material to be used for backfill shall be either 15MPa/19 concrete or material complying with 3.2.2 compacted in 150mm layers to 90% of modified AASHTO maximum density, as ordered on site.

**PSD 4 PLANT**

## PSD 4.4 DETECTORS

Replace the contents of Clause 4.4 with the following:

"The Contractor shall, for the purposes of detecting and locating underground services in accordance with the provisions of Subclause 5.4 of SABS 1200 A and Subclause 5.1.2 of SABS 1200 D, at its own cost, provide and use detecting equipment which is suitable for the detection of underground cables and pipes."

**PSD 5 CONSTRUCTION**

## PSD 5.1 PRECAUTIONS

PSD 5.1.1 Safety

## PSD 5.1.1.1 Barricading and lighting

Replace "Machinery and Occupational Safety Act, 1983 (Act 6 of 1983)" with "Occupational Health and Safety Act, 1993 (Act 85 of 1993) and Construction Regulations 2014".

## PSD 5.1.1.2 Safeguarding of excavations

Replace "Machinery and Occupational Safety Act" with "Occupational Health and Safety Act, 1993 (Act 85 of 1993) and Construction Regulations 2014."

Add the following to paragraph (b) (2):

"The slope of the sides of an excavation or trench may never be steeper than 60° to the horizontal and all costs incurred to slope the sides of an excavation or trench will, irrespective of the angle of the slope, be deemed to be included in the rates quoted for excavation."

## PSD 5.1.1.3 Explosives

Replace the contents of this Clause with the following:

"The use of explosives is prohibited on this Contract."

PSD 5.1.2 Existing services

## PSD 5.1.2.2 Detection, location and exposure

Replace the contents of Clause 5.1.2.2 with the following:

"The exposure by the Contractor of underground services, as required in terms of Clause 5.4 of SABS 1200 A and PSA 5.4 shall be carried out by careful hand excavation at such positions and to such dimensions as are agreed to by the Employer's Agent.

Unless otherwise instructed or agreed by the Employer's Agent, no service shall be left exposed after its exact position has been determined and all excavations carried out for the purposes of exposing underground services shall be promptly backfilled and compacted to the following densities:

- (a) In roadways: 95% Mod AASHTO density; and
- (b) In all other areas: 93% Mod AASHTO density.

Where hand excavations to expose underground services have to be carried out in roadways, the Contractor shall reinstate the road layerworks in accordance with the provisions of the Contract or as directed.

Payment in respect of the exposing of the services by means of hand excavation as described above shall be deemed to be covered by the rates tendered under items PSA 8.8.4(c)."

Payment in respect of the reinstatement of layerworks in road ways will be made in accordance with PSDB 8.3.6.1 and subclause 8.3.6.1 of SABS 1200 DB."

PSD 5.1.2.3 Protection of cables

Replace Clause 5.1.2.3 with the following:

"5.1.2.3 Protection during Construction

Further to the requirements of PSA 5.4.2 and Subclause 5.4.2 of SABS 1200A, major excavating equipment and other Plant shall not be operated dangerously close to Known Services. Where necessary, excavation in close

proximity to Known Services shall be carefully carried out with suitable hand tools, excluding picks wherever their use could damage the services. No additional payment will apply to such more difficult work.

Should any service not being a Known Service be discovered or encountered during the course of the Contract, the Contractor shall, in addition to complying with the requirements of Sub-clause 5.4.2 of SABS 1200A (as amended), immediately notify the Employer's Agent thereof and implement such measures as will prevent damage of such service or, if it was damaged in the course of discovery, will prevent and minimise the occurrence of any further damage occurring."

#### PSD 5.1.2.4 Negligence

The Contractor shall not repair any service damaged. Where the damage is the result of the Contractor's negligence he shall bear all costs of the repairs undertaken by the owner, as well as the costs of associated damages."

#### PSD 5.1.6 Road traffic control

Delete the contents of Clause 5.1.6 and replace with the following:

"The provisions of PSA 5.10 shall apply as applicable. Where the work affects the operation or safety of public road traffic, vehicular and/or pedestrians in addition, to complying with the requirements of 5.1.1.1, the Contractor shall provide, erect and maintain traffic signs, personnel and equipment that conform to the requirements, layout and guidelines of the "South African Road Traffic Signs Manual", as well as the Site Manual entitled "Safety at Roadworks in Urban Areas" as published by the Department of Transport, in number and in layout, as shown in these manuals.

Where necessary and as shown in these manuals, warning lights, an adequate number of flagmen and appropriate barricades, clearly visible to oncoming traffic at all times of the day and night shall be provided. If steel drums are used for this purpose, they shall be ballasted with soil, sand or stones and the outside shall be whitewashed and provided with retro-reflective material (in the case of tape, of minimum width 10mm), red on the left-hand side facing oncoming traffic and white on the right-hand side. The drums shall be maintained in a clean and effective condition and no stones shall be placed on them.

Refer to Annexure E for typical Traffic Control – Minor Works."

### PSD 5.2 METHODS AND PROCEDURES

#### PSD 5.2.1 Site preparation

##### PSD 5.2.1.2 Conservation of topsoil

Add the following:

"Topsoil ordered to be stripped and conserved for later use shall be stockpiled in a manageable heap, not higher than 2,0m, where designated by the Employer's Agent. The material together with such vegetation and small roots as may occur within the specified depth shall be stripped, loaded, transported to stockpile within a freehaul distance of 0,5 km, maintained and wetted (dust control) for the full duration of the Contract or until use."

#### PSD 5.2.2 Excavation

##### PSD 5.2.2.1 Excavation for General Earthworks and for Structures

Add the following to paragraph (b):

"When the nature of the material precludes the above procedure, additional excavations shall be carried out to provide working space for the erection of formwork. In general, payment will be made for excavating a working width of 600mm, but the Contractor may excavate a greater working width at no additional cost to the Employer."

Replace the first sentence of paragraph (e) with the following:

"Where excavations have been carried below the authorised levels, the Contractor shall backfill such excavations to the correct level with approved gravel material compacted to 98% of modified AASHTO density or to the density of the surrounding material, whichever is the higher density.



Where excavations for structures have been carried out in hard material, the Employer's Agent may direct that over-excavation be backfilled with weak concrete if there is a danger of settlement or differential settlement of the foundations.

Where the sides of excavations against which concrete is to be cast have been over-excavated or have collapsed partially, the Contractor shall retrim the excavations if necessary and, unless other remedial measures are agreed to by the Employer's Agent, shall cast the concrete for the structure, including the additional concrete that may be required as a result of the over-excavation or partial collapse. The cost of the additional concrete or remedial measures shall be for the Contractor's account."

#### PSD 5.2.2.3 Disposal

Replace the words "in the Project Specification." At the end of the second sentence with "at sites described under C.3.4.5.5."

#### "PSD 5.2.2.4\* Selection and Stockpiling

Approval or designation of the material in a particular borrow pit or excavation for a particular purpose does not imply that all the material in the borrow pit or excavation is suitable for the particular purpose for which the said approval or designation relates, nor that all material in the borrow pit or excavation should be used for the particular purpose. The Contractor shall select suitable material from that borrow pit or excavation, discard unsuitable material and reserve material for other purposes as necessary.

The Contractor shall organise and carry out its operations in such a manner as will prevent the contamination of suitable embankment, fill and backfill material with unsuitable materials. Any excavated material which becomes, in the Employer's Agent's opinion, unsuitable for use in embankments, fills or backfill as a result of contamination, shall be disposed of in a manner acceptable to the Employer's Agent and shall be replaced by the Contractor with materials acceptable to the Employer's Agent, all at the Contractor's cost.

When required, or when ordered by the Employer's Agent, material shall be temporary stockpiled at sites indicated by the Employer's Agent for later use. The additional costs of stockpiling material shall be paid to the Contractor in accordance with the provisions of Sub-clause PSD 8.3.15."

#### PSD 5.2.3 Placing and Compaction

##### PSD 5.2.3.1 Embankments

Replace the first sentence of the sixth paragraph with the following:

"Each layer shall be compacted at OMC to a density as specified and in the case of cohesive soil and 100% of modified AASHTO maximum density in the case of non-cohesive soil."

PSD 5.2.3.3\* The material of each area of fill shall, unless otherwise approved, be deposited in layers of thickness, before compaction, not exceeding 150 mm. The material shall be spread to form a layer that is approximately uniform thickness, and graded over the whole area of the fill site.

Each layer shall be compacted at OMC to a density of at least 93% of modified AASHTO density in the case of cohesive soil or 100% in the case of non-cohesive soil. Should the material be too wet, owing to rain or any other cause, it shall be harrowed and allowed to dry out to the correct moisture content before compaction is undertaken.

The contractor shall ensure that stormwater will at all times be discharged uniformly over the full fill area or through specially prepared and protected drainage ditches to prevent scouring of the slopes."

#### "PSD 5.2.3.4\* Backfilling over-excavation and overbreak

The material to be used shall comply with 3.2.1, except that the maximum particle size shall not exceed  $\frac{2}{3}$  of the thickness of the layer being placed, and shall be compacted to at least 93% of modified AASHTO maximum density.

##### PSD 5.2.5.1 Freehaul

Replace all except paragraph (a) of Subclause 5.2.5.1 with the following:

"(b) In respect of all materials not referred to in paragraph (a) above, and subject to the provisions of subclause PSD 5.2.5.3, the freehaul distance within which the Contractor will be required to move material without separate compensation shall be 30 km, irrespective of whether the material is hauled beyond the boundaries of the site or otherwise."

"PSD 5.2.5.3\* Special cases relating to overhaul

(a) When material is excavated and stockpiled on the Employer’s Agent instructions before being reloaded and transported to its point of final use, freehaul shall apply twice, firstly from the point of excavation to stockpile and secondly from stockpile to the point of final use (See subclause PSD 8.3.14)."

**PSD 6 TOLERANCES**

PSD 6.1 POSITIONS, DIMENSIONS, LEVELS, ETC.

Add the following:

"PSD 6.1(c) Bulk earthworks

The tolerances applicable to excavations for structural foundations (degree of accuracy II), as specified in Subclause 6.1(a) shall apply, provided no ponding areas or adverse grades result."

**PSD 7 TESTING**

PSD 7.2 TAKING AND TESTING OF SAMPLES

Replace the contents of this subclause with the following:

"The Contractor shall arrange with the approved independent laboratory engaged by the Contractor in terms of clause C3.4.9.5 of the Scope of Works, to carry out sufficient tests on a regular basis as agreed between it and the Employer’s Agent to determine whether the degree of compaction, and, where applicable, the quality of materials used, comply with the Specifications and shall submit the results of these tests to the Employer’s Agent in a form approved by him.

The compaction requirements for fills shall be deemed complied with when at least 75% of the dry-density tests on any lot show values equal to or above the specified density and when no single value is more than five percentage points below the specified value."

**PSD 8 MEASUREMENT AND PAYMENT**

PSD 8.3 SCHEDULED ITEMS

PSD 8.3.1 Site Preparation

Replace Clauses 8.3.1.1 and 8.3.1.2 with the following:

"Where Site preparation such as clearing, grubbing, the removal of large trees or the removal and stockpiling of topsoil or surface obstructions are required, the provisions and scheduled items of SABS 1200 C shall apply."

PSD 8.3.3 Restricted excavation

Replace the heading of subclause 8.3.3 (a) and the contents of the first two paragraphs with the following:

"PSD 8.3.3(a) Excavate in all materials backfill, compact and dispose of surplus material for launching and receiving pits to the following depths..... Unit: m<sup>3</sup>

Separate items will be scheduled for each category of excavation and for each class or manner of disposal of excavated material.

All restricted excavation shall be measured by volume.

Replace "in 5.2.2.1 – 5.2.2.3 (inclusive)" at the end of subclause (a) with "in Clauses 5.2.2.1 to 5.2.2.4 (inclusive)."

Delete Clause 8.3.3(b) (1) as well as any reference to intermediate excavation in subclause (b). For the purposes of measurement and payment, excavation other than hard rock and boulder excavation will not be separately classified (refer PSD 3.1.2)."

"PSD 8.3.3(c)\* Extra over 8.3.3(a) for hand excavation where ordered..... Unit: m<sup>3</sup>

This item shall apply to hand excavation ordered by the Employer's Agent or when the Employer's Agent considers that, owing to circumstances, excavation by mechanical excavators is not practicable. It shall not apply to hand excavation for trimming or finishing an excavation made by mechanical means.

The rate tendered shall cover the additional cost, extra over that provided for under 8.3.3(a), for carrying out restricted excavation by hand tools where ordered by the Employer's Agent.

The volume shall be computed from the dimensions specified, shown on the drawings, or ordered by the Employer's Agent.

Note:

Normal handwork required to clean and trim the sides and bottoms of mechanically completed restricted excavations will not qualify for payment in terms of this Clause."

PSD 8.3.4 Importing of Materials

Delete Clause 8.3.4(a) in totality.

PSD 8.3.6 Overhaul

Add the following:

"No overhaul shall apply to material from commercial sources or to material disposed of on sites provided by the Contractor or disposed by other means employed by the Contractor."

PSD 8.3.10 Topsoiling

Change the unit to "m<sup>3</sup>" and replace the contents of this item with the following:

"The unit of measurement shall be the cubic metre and the quantity shall be calculated from the authorised dimensions.

The tendered rate shall include loading of the topsoil from stockpiles, transporting it regardless of distance involved, and off-loading, spreading, shaping and lightly compacting the topsoil."

PSD 8.3.11 Grassing or other vegetation cover

Replace the entire contents with the following:

"PSD 8.3.11.1 Planting of grass sods ..... Unit : m<sup>2</sup>

The tendered rate shall include full compensation for planting and maintenance in accordance with the requirements of PSD 5.2.4.3.

PSD 8.3.11.2 Hydroseeding ..... Unit : m<sup>2</sup>

The tendered rate shall include full compensation for the seed mixture, for furnishing cellulose pulp and mixing it with seed and water and applying the mixture, watering, weeding, re-hydroseeding bare patches, and for any other work except mowing, which may be necessary for establishing an acceptable cover and maintaining the grass for a period of three months after an acceptable cover has been established."

"PSD 8.3.14\* Extra over items PSD 8.3.2 and PSD 8.3.3 for disposing of spoil material on a site provided by the Contractor..... Unit: m<sup>3</sup>

The unit of measurement shall be the cubic metre, measured in accordance with Subclause 8.2 of SABS 1200 D, of surplus and/or unsuitable material disposed of, on the instruction of the Employer's Agent, at a spoil site or spoil sites provided by the Contractor.

The tendered rate shall include full compensation for the additional cost of providing a spoil site or other means of disposing of surplus spoil material, for transporting the material regardless of the distance involved, for acceptance charges for such material and for all other incidental costs to dispose of the spoil material."

"PSD 8.3.15\* Extra over items 8.3.2.1 and PSD 8.3.3 for temporary stockpiling ..... Unit: m<sup>3</sup>

The unit of measurement shall be the cubic metre of material from necessary excavations, temporarily stockpiled by the Contractor on the instructions of the Employer's Agent, before being used in embankments, fills or backfill.

Measurements shall be taken in place in compacted embankment, fills or backfill as the case may be.

The tendered rate shall include for the costs, additional to those provided for in PSD 8.3.2.1 and PSD 8.3.3 of off-loading, forming and maintaining the stockpile for as long as is required, reloading and transporting regardless of the distance involved from the stockpile.

Payments to the Contractor under this item will only be made in respect of that material stockpiled on the instructions of the Employer's Agent (which instruction shall state specifically that payments for such stockpiling will be paid for under this item) and no payments will be made to the Contractor under this item in respect of materials stockpiled by the Contractor on its own volition, nor for materials necessarily stockpiled by the Contractor in consequence of the sequence of operations adopted by it in the course of executing the Works, whether such stockpiling was avoidable or otherwise."

## **PSDB            EARTHWORKS (PIPE TRENCHES)**

### **PSDB 3            MATERIALS**

#### PSDB 3.1            CLASSES OF EXCAVATION

Delete the contents of Clause 3.1 and replace with the following:

“The classification shall be as described in PSD 3.1”.

#### PSDB 3.5            BACKFILL MATERIAL

Delete the contents of Clause 3.5(b) and replace with the following:

“Materials used in the reinstatement of trenches beneath or within a new roadway, up to underside of the road layers, shall be 37,5mm basecourse quality material conforming to SABS 1200 ME compacted in 150mm layers to 95% of Modified AASHTO maximum density. The area subject to loads from road traffic shall be held to apply for a width of 150mm beyond the back of kerb.

For services along the edge of roads beyond the back of kerb or edging strip, the selected fill material shall have a PI not exceeding 12 and a minimum CBR 7 at 90% of modified AASHTO maximum density.”

Add the following paragraphs to sub-clause 3.5:

#### "(c)    Cement-stabilised backfilling

Backfilling shall, where directed by the Employer’s Agent, be stabilised with 5% cement. The aggregate shall consist of approved soil or gravel containing stones not bigger than 38 mm and with a plasticity index not exceeding 10.

The soil or gravel shall be mixed with 5% cement and shall be compacted in layers of 100 mm thick to 90% of modified AASHTO density.

#### (d)    Soilcrete backfilling

The aggregate for soilcrete shall be mixed with 5% cement and shall consist of approved soil or gravel containing stones not bigger than 38 mm and with a plasticity index not exceeding 10.

The soil or gravel shall be mixed in a concrete mixer with the cement and enough water to acquire a consistency that allows the mixture to be placed with vibrators to fill all voids between the pipe and the sides of the trench. Shuttering shall be used where necessary.”

### PSDB 3.6            MATERIALS FOR REINSTATEMENT OF EXISTING ROADS AND PAVED AREAS

#### PSDB 3.6.1            Subbase and base:

Delete the contents of Clause 3.6.1 and replace with the following:

“Where trenches cross existing surfaced roads the following shall apply:

- (a)    The service (pipe, cable etc.) shall be laid on a bedding cradle, and covered with a fill blanket, as specified in SABS 1200 LB or in the Project Specification.
- (b)    The remaining portion of the trench, from the top of the fill blanket to the road surface, shall be filled with cellular trench backfill material.
- (c)    The specification for this material is as follows:
  - (i)    Definition                                :    Material shall consist of a cellular light-weight concrete incorporating large volumes of controlled micro-air cement and sand.

- (ii) Density Range : 150 - 1400 kg/m<sup>3</sup> and have an equivalent CBR value greater than 100.
- (iii) Consistency : Material shall be of a pickable nature after final setting.
- (iv) Admixture : The admixture is a pre-foam organic compound accelerated by the addition of calcium chloride. Chloride free additive must be used where the outer casing of the service being covered is metallic.
- (v) Setting Times : The finished product must achieve initial set within 90 minutes. It must then be able to carry light traffic.
- (vi) Specifications : British Standards draft S.W.P. 146 of July 1990.

Delete the heading and contents of Clause 3.6.4 and replace with the following:

**“PSDB 3.6.4 Bituminous and Premix Surfacing**

Where this project is undertaken simultaneously with the construction of bituminous and/or premix surfaced roads, a hot premix and/or bituminous surfacing in accordance with the specifications applicable to the road surfacing shall be used in the reinstatement of the road surface. Where the construction of surfaced roads do not form part of this project a hot premix (Type IVa or 7mm sidewalk mix) laid on a cleaned surface which has been previously tack coated with an anionic emulsion shall be used in the reinstatement of the road surface.”

**PSDB 3.7 SELECTION**

Replace the words “if he so wishes” in the first line of the second paragraph with the words “at his own cost”.

Add the following to subclause 3.7:

“Notwithstanding anything to the contrary stated in this subclause the Contractor shall, where so ordered, selectively stockpile topsoil, material complying with 3.5, as well as road materials for re-use in terms of 5.9.”

**PSDB 5 CONSTRUCTION**

**PSDB 5.1.2.2 Special water hazards**

The Contractor shall take note that no special water hazards are designated. The Contractor shall therefore deal with all water as specified in 5.1.2.1, including flow into trenches due to a high or perched water table and any overland flow.

**PSDB 5.1.3 Accommodation of Traffic and Access to Properties**

Replace the semi-colon and the word “and” at the end of Subclause 5.1.3(a) with a full stop and replace item (b) with the following:

“(b) Where necessary and to achieve compliance with his obligations in terms of the Scope of Work (Clause C3.4.9.5) to provide and maintain pedestrian and vehicular access to properties affected by the Works, the Contractor shall construct and maintain to the satisfaction of the Employer’s Agent, such temporary access roads around, and/or steel or timber bridges over excavations in roads, pavements, entrances or accesses to properties.

Temporary pedestrian access bridges shall be at least 1,2 m wide and temporary access bridges for vehicles shall be at least 3,6 m wide. All temporary access bridges shall be fitted with handrails as well as protective mesh fencing on both sides.

On completion of the work, the Contractor shall dismantle and remove all such temporary constructions and reinstate these areas to their former condition.

No direct payment will be made for the cost of providing access to erven and properties. Payment will be deemed to be covered by the various rates tendered and paid. Payment for accommodation of traffic will be as allowed for under 8.3.7 of SABS 1200 and PSDB 8.3.7 and PSDB 8.3.8.”



## PSDB 5.2 MINIMUM BASE WIDTHS

Notwithstanding the provisions of this Sub-Clause, the minimum base widths for the various trenches shall be as shown on the Drawings.

## PSDB 5.4 EXCAVATION

Add the following:

"Except where otherwise specified, trenches shall be of such a depth that the minimum cover over the pipes shall be 700mm, except at road-crossings, where the minimum cover shall be 1000 mm.

No trench may be left open over the period 16 December to 8 January inclusive.

Where trenches have to be excavated under this Contract adjacent to live services / other services laid under other contracts, it may be necessary to shore trenches to prevent damage to the live services / other services. It will be the responsibility of the Contractor to ensure that services constructed under other contracts of live services are not damaged by his operations during the Contract."

## PSDB 5.6 BACKFILL

PSDB 5.6.1 General

Replace the first sentence with the following:

"Backfilling of pipe trenches may only commence after the pipe has been laid, firmly bedded in the specified cradle, the blanket placed and compacted as specified and after the pipe has been tested in terms of Clause 7 of SABS 1200 L."

PSDB 5.6.2 Material for backfilling

Replace the last paragraph of this Clause "In areas.....backfill" with the following:

"The material for backfilling in areas subject to road traffic loads shall comply with PSDB 3.5."

PSDB 5.6.3 Disposal of soft excavation material

Replace the words "unless otherwise required in the project specification." at the end of this Subclause with:

"or to spoil in accordance with the requirements of PSD 5.2.2.3 and Subclause 5.2.2.3 of SABS 1200 D, as instructed by the Employer's Agent."

PSDB 5.6.6 Completion of backfilling

Add the following:

"If in the opinion of the Employer's Agent insufficient progress is being made with the backfilling of trenches, the Employer's Agent will be entitled to order that no further excavation takes place until the backfilling operation has caught up."

## PSDB 5.7 COMPACTION

PSDB 5.7.1 Areas not subject to Traffic Loads

Add the following sentence:

"All non-cohesive material shall be compacted to 100% of modified AASHTO maximum density."

Replace the heading and contents of subclause 5.7.2 with the following:

**PSDB 5.7.2** Areas Subject to Traffic Loads and beneath concrete lined walkways, cyclepaths and stormwater channels:

In areas subject to traffic loads and beneath concrete lined walkways, cyclepaths and stormwater channels, trenches shall be backfilled from the top of the bedding to the extent scheduled below in layers of thickness not exceeding 150mm after compaction, and the material shall be compacted to 95% of modified AASHTO maximum density.

TRENCH DESCRIPTION	EXTENT OF BACKFILL
Trenches beneath roadways to be constructed under the contract	Up to designated level of underside of layerworks
Trenches beneath concrete lined walkways, cyclepaths and stormwater channels	Up to designated level of underside of concrete lining”

“PSDB 5.9.7\* Procedure for Backfilling with Trenchfill

- a) The cellular backfill material (hereinafter called “trenchfill”) shall be ordered from an approved supplier and shall be delivered to site in a truck-mixer. The material shall be poured directly into the trench and no vibrating or additional compaction shall be necessary.
- b) The trenchfill shall be cast flush with the surrounding road surface and trowelled to an even surface.
- c) After the trenchfill has set, either the same day or the following day, the top 40mm of the trenchfill shall be scabbled-off using a pick or paving breaker and the depression filled, reinstated and compacted using hot asphalt. During and after compaction, the asphalt shall be finished flush with the surrounding road surface.
- d) The asphalt reinstatement of the trench shall be carried out by the Contractor.

“PSDB 5.9.8\* Safety

During the time period between pouring the trenchfill into the trench, and the setting of this material, it is imperative that no person or animal be allowed to gain access to the trench. Suitable barricades shall be provided around the trench and a guard placed on duty at the trench until the material sets.

Should the trenchfill not be set by nightfall, safety lamps shall be placed on the barricades.

The responsibility for public safety lies with the organisation carrying out the excavation and backfill operations.

**PSDB 8 MEASUREMENT AND PAYMENT**

PSDB 8.1.1 Replace “along the route of the pipeline” in the third line of Clause 8.1.1 with “as specified in PSDB 5.6.3”.

Replace the contents of subclause 8.2.4 with the following:

“No separate items will be measured for shoring. Refer to Item PSD 5.1.1.2 in this regard.”

“PSDB 8.2.5\* If payment in terms of PSA 8.8.4 has been made to expose an existing service and the excavation involved falls within a proposed trench, the quantity measured for trench excavation shall be reduced accordingly.”

**PSDB 8.3 SCHEDULED ITEMS**

**PSDB 8.3.2** Excavation

- (a) Excavate in all materials for trenches, backfill, compact and dispose of surplus material for sewer lateral and/or erf connections and/or point repairs, for the following depths  
..... Unit: m or m<sup>3</sup>

Replace the first sentence with the following:

“Items will be provided for various trenches widths as specified and detailed on the Drawings and various depths in increments as specified in the Schedule of Rates.”

Add the following to Clause (a):

“The rate tendered shall also cover the cost of complying with PSDB 3.5, as well as the cost of any disruption or delay in complying with PSDB 5.4 and PSL 5.1.4.

Delete Clause 8.3.2 (b)(1) as well as any reference to intermediate excavation in Clause (b). For the purpose of measurement and payment, excavation other than hard rock excavation will not be separately classified (refer PSDB 3.1).

Add the following new sub-items in 8.3.2 (b):

(3) Hand excavation where ordered ..... Unit: m<sup>3</sup>

The rate tendered shall cover the additional cost, extra over that provided for under 8.3.2(a), for carrying out, where ordered by the Employer’s Agent and up to a depth of 1,0metre, trench excavation by hand as well as for any inconveniences related to the continuation with machines across and over hand-excavated trenches.

The volume shall be computed from the dimensions specified, shown on the Drawings or ordered by the Employer’s Agent.

Normal handwork required to clean and trim the sides and bottoms or mechanically excavated trenches will not qualify for payment in terms of this clause.

(4) Hand backfilling machine excavated trenches where ordered ..... Unit: m<sup>3</sup>

The rate tendered shall cover the additional cost, extra over that provided for under 8.3.2(a) to, except for compaction which shall be carried out by machine, hand backfill machine excavated trenches where ordered by the Employer’s Agent.

The volume shall be computed from the dimensions specified, shown on the Drawings or ordered by the Employer’s Agent.

(5) Selective stockpiling of topsoil where ordered..... Unit: m<sup>3</sup>

The rate tendered shall cover the additional cost, extra over that provided for under 8.3.2 (a), to selectively stockpile topsoil where ordered by the Employer’s Agent, including of off-loading, forming and maintaining the stockpile for as long as is required, reloading and transporting within the applicable freehaul distance from the stockpile.

The volume shall be computed from the dimensions ordered by the Employer’s Agent.”

(6) Extra over 8.3.2a. and PSDB 8.3.2a for disposing of spoil material on a site provided by the Contractor ..... Unit: m<sup>3</sup>

The unit of measurement shall be the cubic metre, measured in accordance with Sub-clause 8.2 of SABS 1200D, of surplus and/or unsuitable material disposed of, on the instruction of the Employer’s Agent, at a spoil site or spoil sites provided by the Contractor.

The tendered rate shall include full compensation for the additional cost of providing a spoil site or other means of disposing of surplus spoil material, for transporting the material regardless of the distance involved, for acceptance charges for such material and for all other incidental costs to dispose of the spoil material.

(7) Backfill stabilised with 5% cement where directed by the Employer’s Agent ..... Unit : m<sup>3</sup>

The unit of measurement shall be the cubic metre of backfill material, measured in place after compaction according to the authorised dimensions, which was stabilised on the Employer’s Agent’s instructions in accordance with Sub-clause PSDB 3.5(c).

The tendered rate shall include full compensation for supplying the cement and for selecting, mixing, backfilling and compacting the stabilised material to 90% of modified AASHTO density.”

(8) Soilcrete backfill where directed by the Employer’s Agent ..... Unit : m<sup>3</sup>

The unit of measurement shall be the cubic metre of soilcrete placed on the Employer’s Agent’s instructions in accordance with Sub-clause PSDB 3.5(d), measured in place according to the authorised dimensions.

The tendered rate shall include full compensation for supplying the cement and for selecting, mixing and placing the soilcrete as well as for the cost of shuttering if required.”

PSDB 8.3.3.3 Compaction in road reserves

Replace the contents of this Clause with the following:

“This item shall only apply to the compaction of materials in areas subject to road traffic loads as defined in PSDB 3.5.

The volume will be computed from the length of trench falling within the defined area, the width as shown on the Drawings and the depth from the top of the bedding to the designated level of the underside of the required selected layer, finished verge level etc. as scheduled on the Drawings. The rate tendered shall cover the cost of the additional compactive effort as specified.

Payment for this work will be additional to that covered by 8.3.2(a).”

PSDB 8.3.3.4 Overhaul

Replace the contents of this subclause with the following:

“Measurement and payment shall be in accordance with subclause PSD 5.2.5.”

PSDB 8.3.6.1 Reinstate road surfaces

Replace from “a) Gravel on shoulders....” Through to “....Etceteras.....Unit: m<sup>2</sup>” with the following:

- “(a) Backfilling using Trenchfill ..... Unit : m<sup>3</sup>
- (b) Hot asphalt type IVA (min thickness 40mm) ..... Unit : m<sup>2</sup>
- (c) Brick paved Driveways and Walkways..... Unit : m<sup>2</sup>
- (d) Concrete Driveways and Walkways (min thickness 100mm)..... Unit : m<sup>2</sup>
- (e) Grass verges and Lawns ..... Unit : m<sup>2</sup>

For item (a) the volume will be computed from the length of trench as applicable and the width determined from the applicable side allowances specified in 8.2.3, and the depth from road surface to top of selected fill blanket. Payment for this item will be additional to that for excavation covered by 8.3.2.

For items (b) to (e) the area will be computed from the length of paved trench surface as applicable and the width determined from the applicable side allowances specified in 8.2.3.

The rates shall further cover the cost of temporary accommodation of traffic (including the signs and bypasses), arranging for safety of the public, excavation (including breaking up, removal and disposal of surplus material)

and the subsequent reinstatement as specified in 5.9, and shall include the cost of delays and the cost of any risk of having to repair damage as specified in 5.10.

Replace the heading and contents of Clause 8.3.7 with the following:

“PSDB 8.3.7 Traffic Control – Minor Works ..... Unit: No

“The unit of measurement shall be the No of road crossings to be done (including moving and re-erection in the case of half-width construction) and shall allow for the full compliance with the details as shown in Annexure E. The rate shall include full compensation for supplying, erecting and placing of signs, flagmen, and removal of signs after construction, advertisements (if required for road closures), as applicable.”

“PSDB 8.3.8\* Extra Over 8.3.7 for supplying and erecting additional road signs (as ordered by the Employer’s Agent) Unit: No

Separate items will be scheduled for each different size or type of road traffic sign that is required additional to what is provided for under the details shown in Annexure E as ordered by the Employer’s Agent.

The rate shall cover the cost of providing and erecting signs, as applicable.”

## **PSLB**      **BEDDING (PIPES)**

### **PSLB 2.3**      **DEFINITIONS**

#### Flexible pipe

Add the following:

“uPVC pipes shall be classified as flexible pipes.”

### **PSLB 3**      **MATERIALS**

#### PSLB 3.1      **SELECTED GRANULAR MATERIAL**

Replace the contents of Clause 3.1 with the following:

“Selected granular material shall be an aggregate, sand or granular material, all being a non-cohesive material that is free of vegetation, the grading analysis of which shows 100% passing a 9,5 mm sieve and not more than 5% passing a 0.075mm sieve and has a compactability factor not exceeding 0,4.”

#### PSLB 3.3      **BEDDING**

Add the following:

“For the purposes of this clause uPVC pipes shall be classified as flexible pipes.”

#### PSLB 3.4.1      Suitable material available from trench excavation

Replace the words “(but is not required)” in the fifth line with the words “(at his own cost).”

#### “PSLB 3.5\*      **BEDDING IN WATERLOGGED CONDITIONS**

Where ordered by the Employer’s Agent a bedding cradle of the specified thickness, comprising of 6,7mm concrete stone complying with SABS 1083, shall be used in waterlogged conditions.”

### **PSLB 5**      **CONSTRUCTION**

#### PSLB 5.1.1.2      **Bottom**

Add the following:

“Where expansive clay is encountered in the trench bottom, the selected fill blanket shall comprise of selected granular material.”

#### PSLB 5.1.2      Details of bedding

Notwithstanding the provisions of this subclause, pipes shall be bedded and protected in accordance with the details shown on the Drawings, which shall supersede, as applicable, drawings LB 1 through to LB 5.

#### PSLB 5.2.1      Class A Bedding

Add the following:

“or a period of 5 days has elapsed after the placing of the concrete in that section, whichever occurs first”

#### PSLB 5.2.2      Class B Bedding

The dimension “x” for all rigid and flexible pipes as referred to in drawing LB-1 and LB-2, shall be 150mm.

#### PSLB 5.3      **PLACING AND COMPACTING OF FLEXIBLE PIPES**



b) 200mm selected fill blanket

**PSLB 8 MEASUREMENT AND PAYMENT**

**PSLB 8.1.3 Volume of bedding materials**

Notwithstanding the provisions of this subclause, the volume of bedding will be computed from the dimensions shown on the Drawings.

Replace the last sentence with the following:

“No allowance will be made for bulking of material or any additional volume of bedding material required due to over break or any other cause.

Further, the volume of bedding displaced by the pipeline will not be measured for payment.”

**PSLB 8.1.5 Disposal of displaced material**

Replace the contents of this Clause with the following:

“Material displaced by the pipeline and by imported material from sources other than trench excavation, shall be disposed of at an approved site furnished by the Contractor. No haulage shall be payable for such material.”

**PSLB 8.1.6 Free-haul**

Delete the words “of 0,5km” in the first line of this Clause.

**PSLB 8.2.2.3 From commercial sources**

(c)\*6,7mm concrete stone to SABS 1083 ..... Unit: m<sup>3</sup>

Add the following to the end of this Clause:

“Commercial sources shall include off-site sources located by the Contractor.”

**PSLB 8.2.4 Encasing of pipes in concrete ..... Unit : m<sup>3</sup>**

The item volume for concrete encasement to the pipes will be computed from the dimensions of the concrete as given on the drawings.

The concrete shall be 20 Mpa concrete with 19mm stone. The rate shall cover the cost of dealing with any excavation (in all material including disposal of surplus) that is additional to that measured under the item for pipe trench excavation, the cost of encasing the pipe in concrete including the cost of formwork (if any), etc., and the cost of formwork to form flexible joints at each pipe collar or joint.

**PSLB 8.2.5 Overhaul of Material for Bedding ... etc.**

Delete this subclause

**PSLD**                      **SEWERS**

**PSLD 1**                      **SCOPE**

Add to sub-clause 1.1: “Drawings Numbered LD2 to LD8 has been replaced by the latest “STANDARD DETAILS” as published by the Infrastructure and Engineering Directorate. Whenever the aforementioned drawings are referred to, the appropriate of the details reflected in the “STANDARD DETAILS” drawings shall apply.”

**PSLD 2**                      **INTERPRETATION**

PSLD 2.4                      ADDITIONAL ABBREVIATIONS

Add to “AC: asbestos cement” the following:

“Now referred to as FC”

**PSLD 3**                      **MATERIALS**

Replace the heading and contents of Subclause 3.1.5 with the following:

“PSLD 3.1.5                      Pipes and fittings

PSLD 3.1.5.1                      uPVC structured wall pipes

uPVC structural wall pipes shall comply with SABS 1601 – type 1 with a pipe stiffness of 400 kPA and smooth inner and outer walls, complete with integral sockets, joints and rubber seal rings.

PSLD 3.1.5.2                      uPVC solid wall pipes

uPVC solid wall pipes shall comply with the requirement of SABS 791.”

PSLD 3.1.5.3                      Fittings

Fittings for structured wall pipes and solid wall pipes shall comply with the requirements of SABS 791.”

“PSLD 3.1.8\*                      Channel sections for manholes

Channel sections for manholes shall comprise of FC channel bends.”

PSLD 3.5.2                      Precast concrete sections

Dolomitic aggregate shall be used in the manufacture of precast concrete sections.

PSLD 3.5.3                      Prefabricated FC manholes

Prefabricated FC manholes will not be permitted.

PSLD 3.5.4                      Concrete

The use of dolomitic aggregate will not be required for cast in situ concrete.

PSLD 3.5.5                      Sand

The use of dolomitic sand will not be required for cast in situ concrete.

PSLD 3.5.7                      Step irons

Step irons in manholes will not be required.

PSLD 3.5.8      Manhole covers and frames

Replace the contents of this Subclause with the following:

“PSLD 3.5.8.1      Precast concrete elements

Precast concrete roof slabs and covers shall comply with the applicable requirements of SABS 1294 and the strength requirements specified on the drawings. The elements shall be manufactured in accordance with the details shown on the drawings using concrete consisting of dolomitic aggregate.

Precast concrete roof slabs and covers shall be used throughout the works except in roadways, or where otherwise ordered by the Employer’s Agent.

PSLD 3.5.8.2      Cast iron manhole covers and frames

Type 2A heavy duty cast iron manhole covers and frames complying with SABS 558 shall be installed where ordered by the Employer’s Agent, in accordance with the details shown on the drawings.”

**PSLD 5              CONSTRUCTION**

PSLD 5.2.2      Alignment

Add after “SABS 1200 LB” in the first sentence, the following:

“and the details shown on the drawings.”

Replace the last sentence with the following:

“Pipes that have any deviation from straightness shall be so laid that preference is given to level over line.”

“PSLD 5.2.6\*      Jointing

Jointing shall be carried out strictly in accordance with the manufacturer’s instructions.”

“PSLD 5.2.7\*      Depth of cover beneath roadways and vehicular trafficked areas during construction

The minimum depth of cover during construction shall be 750mm.”

“PSLD 5.2.10\*      Sewer lateral/erf connections

Lateral/erf connections shall be reinstated immediately after installation of the liner by means of robotic cutting from within the pipe or by excavation.”

Any hole made in the liner for this operation shall be sealed in a manner approved by the Employer’s Agent.”

PSLD 5.4      CONNECTIONS TO MANHOLES

Replace Clause 5.4 with the following:

End seals shall be made between the new pipe liner and the existing pipe with cementitious repair mortar. The manhole benching shall be reconstructed and the channel lined with a chemically resistant epoxy coating such as SikaTop-Seal 107 or similar.

PSLD 5.6              MANHOLES, INSPECTION CHAMBERS, ETC.

PSLD 5.6.1      General

Delete in Sub-clauses (a) and (b) the word “brick” and replace by “cast in situ concrete”.

Delete in sub-clause (d) “Drawings LD .....” and replace by “STANDARD DETAILS”.

PSLD 5.6.2      Benching

PSLD 5.6.2.1      Notwithstanding the requirements of this subclause, pipes shall be prepared and built into manholes as shown on the drawings.

PSLD 5.6.2.3      Replace “1:3 cement mortar” in the first line with “concrete topping consisting of 1 part cement, 2 parts sand and 3 parts 7mm concrete stone, by mass. The sand proportion may be varied between 1 ½ and 2 ½ to obtain ideal workability.”

PSLD 5.6.5      Precast concrete manholes

Replace the contents of this Subclause with the following:

“Precast concrete manholes shall be constructed in accordance with the details shown on the drawings. Joints between chamber sections shall be caulked from the inside with 3:1 sand cement mortar or other sealing method approved by the Employer’s Agent.”

PSLD 5.6.6      The laying and jointing of channels in manholes

Add the following:

“Any bitumen or other coating applied to the exterior of channels shall be removed before they are laid.”

“PSLD 5.6.7\*      Finished cover level

Unless otherwise shown on the drawings or ordered, the level of the top surface of the cover shall be:

- for manholes within carriageways; flush with the final surface of the roadway.
- for manholes within road reserves; 50mm above finished ground level.
- for manholes within midblock; 250mm above finished ground level.
- for manholes within open spaces; 500mm above the finished ground level.”

“PSLD 5.6.8\*      Rectification of water infiltration

Any infiltration visible in the manhole channels, pipe ends or benching shall be rectified by demolishing the base and rebuilding.

Rectification of infiltration through the walls and/or joints may be attempted only by externally applied measures, failing which the manhole shall be demolished and re-constructed.”

PSLD 5.9      CONNECTING SEWERS

PSLD 5.9.2      Marker posts

Marker posts are not required.

PSLD 5.9.3      Recording Location

Add: “The information required under this clause shall be shown on the appropriate form obtainable from the Employer’s Agent’s Representative.

“PSLD 5.9.4\*      As-built information

The Contractor shall after completion of a section of pipeline submit the following as-built information:

- Invert levels at manholes
- Distances between manholes

“PSLD 5.11\*            CONNECTIONS OF NEW TO EXISTING RETICULATION

The connection between the new sewer system and the existing collector main shall be effected by the Contractor once the system upstream is complete, tested to specification and accepted by the Employer’s Agent.

**PSLD 6                    TOLERANCES**

PSLD 6.2                OVERALL CENTRE-LINE CONTROL AND MANHOLE LOCATIONS

Replace “±300mm” in the second line of this Subclause with “±100mm”

Replace “plus or minus half a pipe length” in the last line of this Subclause with “±200mm”.

Add the following:

“The Contractor shall note that the positions in plan of manholes are critical. No deviation in excess of the tolerances specified will be accepted without the prior authorization of the Employer’s Agent.”

**PSLD 7                    TESTING**

PSLD 7.1                GENERAL

Add to Subclause 7.1.6 (a):

“In addition to the stated requirements, a torch and mirror test as described in PSLD 7.2.7 shall be carried out on all sections of the sewer, in both directions.”

PSLD 7.2.1            Air test

Add the following:

“After the completion of a successful air test the pipes shall be flushed out to remove all dirt, grit and the like.”

PSLD 7.2.3            Rejection

Add in before “AC” in the first line “uPVC structured wall”

PSLD 7.2.6            Watertightness of manholes

Especially in areas where the water table is low a test, as detailed hereafter, to verify the watertightness of any manhole may be requested by the Employer’s Agent’s Representative.

**Infiltration:**        The excavation surrounding the manhole shall be flooded to approximately the top of wall level and this depth of water maintained for at least 48 hours. The manhole will have satisfied the test requirements provided there is no sign of infiltration of water.

**Exfiltration:**        The manhole shall be filled with water to the top of its wall level and this depth maintained for at least 24 hours. Water may be added to maintain this level.

At the end of the subsequent 24 hour period the drop in water level is to be measured. The manhole will have satisfied the test requirement provided the drop is less than 75mm per metre in depth of the manhole measured from channel invert to the original height of the water. At the discretion of the Employer’s Agent’s Representative a shorter testing time, minimum 3 hours, will be allowed in which case a “drop in level” pro rata to the time tested, shall be used.

“PSLD 7.2.7\*            Torch and mirror test

The equipment for the test shall comprise of the following:

- A torch capable of emitting a strong beam of light.
- A mirror
- A wooden plug covered on one side with suitable reflector material. The diameter of the plug shall suit the diameter of the pipe being tested.

The test shall be carried out by plugging one end of the pipe with the plug reflector and reflecting the torch beam off the mirror down the pipe from the other end. For the pipeline to be acceptable at least 50% of the plug's reflected area shall be visible."

"PSLD 7.2.8\*      Acceptance criteria

The acceptance of the pipe length or manhole shall depend upon whether it satisfies the criteria set out in SABS 1200 LD clauses 6,7 and the PS clauses above.

Only tests carried out on the pipelines after completion of the backfilling to ground level (excluding surface restoration) and construction of manholes to roof height and benching will be considered for acceptance purposes.

## **PSLD 8                      MEASUREMENT AND PAYMENT**

PSLD 8.2.1      Supply, lay, joint, bed and test pipeline

Add the following:

"The rate tendered shall further cover the cost of providing the water, flushing out the pipeline as called for in terms of PSLD 7.2.1 and the disposal of the water.

The measured quantity of completed pipe length will only be included in the payment certificate when the pipeline has satisfied the test after the completion of the backfill to ground level - See PSLD 7.2.8. Prior to this, payment will be made as materials on site."

The rate for supplying pipes for lateral and erf connections shall include all costs associated with the supply, delivery to site, storage, handling, cutting to length, dealing with flows, installation and working with short lengths."

PSLD 8.2.2      Extra over item 8.2.1 for specials

The rate for pipe specials shall include all costs associated with the supply, delivery to site, storage, handling, installation, including the cutting of pipes and/or the removal of existing fittings and the connection to the main pipe and the lateral or erf connection.

PSLD 8.2.3      Manholes

Add the following:

"Separate items will be scheduled for the different types of manholes in depth increments of 0,5m, the depth being measured from the invert of the channel in the centre of the manhole to the top level of the cover.

The rate shall cover the cost of dealing with any excavation (as if in soft excavation including disposal of surplus) that is additional to that measured under the item for pipe trench excavation, constructing the manholes complete as detailed on drawings, the provision of materials and the laying and jointing of channels as for "straight through manholes", benching, as well as building in the short pipe specials measured under 8.2.2".

Manholes will not be measured for payment until they have been accepted in terms of PSLD 7.2.6."

Replace Subclause 8.2.5 with the following:



“PSLD 8.2.5        Extra over 8.2.3 for the construction of additional channelling and the building in of short pipe specials at branch manholes and manholes at bends and erf connection manholes  
.....Unit: No

The construction of the additional channelling and the building in of the short pipe specials at branch manholes, manholes at bends and erf connection manholes will be measured extra over that provided for in “straight through manholes”. The rates shall cover the cost of the provision of all materials, the laying and jointing of channel specials including benching and the building in of the short pipe specials measured under 8.2.2, all in accordance with the details shown on the drawings.”

Delete the payment description following Subclause 8.2.5.

PSLD 8.2.6        Erf Connections (Types stated) .....Unit : No.

Replace the contents of clause 8.2.6 with the following:

The rate for erf connections shall also apply to lateral connections. The rate shall include for all materials, plant, equipment, tools, labour and incidental work necessary for the robotic cutting of the new liner at each connection from within the pipe. The rate shall also cover the sealing between the lateral/erf connection and the new liner with a sealing material compatible with the material of the installed pipe liner.

PSLD 8.2.7        Encasing of pipes in concrete

Notwithstanding the provisions of the payment Clause, provision shall be made for forming joints at positions that suit the pipe lengths used, as well as for complying with the requirements of 5.7.

## **TS-TT2 PART TT2: PIPE BURSTING (TRENCHLESS CONSTRUCTION WORKS)**

### **TS-TT2 4 REQUIREMENTS**

#### TS-TT2 4.1 MATERIALS

##### TS-TT2 4.1.1 Replacement Pipes

“Pipes used to slip-line sewers shall be PE80 material PN10 Polyethylene (PE) pipe complying with SANS ISO 4427. Replacement pipes used in the pipe bursting process shall be PE80 material PN10 SDR 17 Polyethylene pipe complying with SANS ISO 4427, unless otherwise stated in the Schedule of Rates.

The PE piping shall be supplied in the maximum possible lengths that handling constraints will permit in order to reduce the number of site-welded joints. The handling of PE piping shall be in accordance with the manufacture’s standards and instructions and to the approval of the Employer’s Agent.

If the new pipe and fittings are damaged before or during installation, they shall be repaired as recommended by the manufacturer or replaced as required by the Employer’s Agent at the Contractor’s expense.

All materials used in the finished liner shall be capable of withstanding the corrosive effects of normal domestic sewage.”

##### TS-TT2 4.1.1.1 Replacement pipes with welded joints

“4.1.1.1 b) iii Welders shall be IFPA members and must stamp welds. Threaded or solvent cement joints and connections are not permitted.”

“4.1.1.1 b) v The Contractor shall agree with the Employer’s Agent on the welding parameters to be used and test welds shall be carried out, tested and approved before the welding on site can commence. The Contractor shall provide a digital thermometer or similar for the accurate measurement of the weld temperatures. A welding record is required for each section of the construction site. This record shall be handed over to the Employer’s Agent’s Representative on a daily basis.”

“4.1.1.1 b) vi A Welding Procedure Specification (WPS) and a qualification joint are required.”

“4.1.1.1 c) The removed beads from each joint shall be retained in separate labelled transparent bags and handed to the Employer’s Agent for inspection and quality purposes.”

##### TS-TT2 4.1.2 Grout

Notwithstanding this clause, only CEM-1 42.5 may be used and the maximum water : cement ratio shall be 0.5 for ordinary Portland cement.

“4.1.2 e) Grout shall have a minimum compressive strength after 28 days of 25MPa.”

#### TS-TT2 4.2 CONSTRUCTION

##### TS-TT2 4.2.1 General

##### TS-TT2 4.2.1.1 Pipe bursting techniques

The Contractor may use any of the methods of pipe bursting techniques.

##### TS-TT2 4.2.1.2 Pipe insertion methods

The pipe insertion method shall be continuous.

##### TS-TT2 4.2.4 Insertion pits

“4.2.4.1 Generally for continuous butt welded HDPE liner pipes the insertion pit should be at least 12 times the liner pipe diameter long with the pit end sloped up to ground level at 1 in 2½ or flatter.

The minimum allowable radius of curvature for the replacement pipe shall be according to manufacturer’s recommendations.”

Replace “SANS 2001” at the end of the first sentence of Clause 4.2.4.2 with “SANS 1200”.

TS-TT2 4.2.6 Pipe bursting

“4.2.6.7 The grout used to reform manhole benching shall be as specified under clause PSLD 5.6.2 of SANS 1200 LD and PSLD 5.6.2.”

TS-TT2 4.2.7 Service connections

Connections shall be re-established onto the liner pipe as specified in the Schedule of Rates.”

**TS-TT2 5 COMPLIANCE WITH THE REQUIREMENTS**

TS-TT2 5.1 TOLERANCES

The liner pipe shall be subject to the tolerances as specified by the manufacturers, which shall allow for allowable pulling forces and allowable elongation of flexible tube.

TS-TT2 5.2 TESTING

TS-TT2 5.2.1 Pressure testing

The Contractor will not be required to complete a pressure test on the completed pipe.

**“TS-TT2 6\* MEASUREMENT AND PAYMENT**

TS-TT2 6.1 SUPPLY, LAY, JOINT AND TEST PIPE LINING THROUGH PIPE BURSTING .....  
.....Unit : m

Payment for pipe bursting shall be made per linear meter of PE pipe installed. The rate shall include for all materials, plant, equipment, tools, labour and incidental work necessary for the complete installation of the new PE pipe used in the bursting process, including the cleaning of the existing sewer pipe and welding of the pipe.

No payment for the above work shall be made without the inspection and approval by means of a CCTV inspection by the Employer’s Agent.”

TS-TT2 6.2 MODIFICATION OF MANHOLES TO RECEIVE PIPE BURSTING ..... Unit: No

The rate for the modification of manholes shall be the number of manholes broken into and repaired irrespective of the number of openings and shall include all costs for the work to be undertaken including the removal of rubble from site, sealing of the ends of the pipes against the channels, dealing with any water, safety measures and equipment, working in confined spaces with limited access and all other costs associated with the work.

TS-TT2 6.3 RE-CONSTRUCTION OF MANHOLES BENCHING AND LINE CHANNEL WITH A CHEMICALLY RESISTANT EPOXY COATING SUCH AS SikaTop-Seal 107 OR SIMILAR FOR THE FOLLOWING NOMINAL PIPE DIAMETERS ..... Unit: No

The rate for the reconstruction of manholes benching shall include all costs for the work to be undertaken including the installation of new channels (if required), the construction of new benching, the supply and application of the epoxy coating in strict accordance with the manufacturer’s instructions, dealing with any water, safety measures and equipment, working in confined spaces with limited access and all other costs associated with the work.

TS-TT2 6.4          EXTRA OVER ITEM 6.1 FOR SPECIALS

The rate for pipe specials shall include all costs associated with the supply, delivery to site, storage, handling, installation, including the cutting of pipes and/or the removal of existing fittings and the connection to the main pipe and the lateral or erf connection.

## **PARTICULAR SPECIFICATIONS**

## **PARTICULAR SPECIFICATION: PA**

### **PA     CCTV CAMERA INSPECTION OF SEWERS**

#### **PA 1       SCOPE**

This specification covers the requirements for the successful inspection of sewers, the assessment of the sewer condition using a standardised grading system and management of data collected.

Five different types of CCTV related operations are envisaged in these specifications:

- a) “Normal” CCTV inspections on existing sewer pipes ranging in size from 100mm to 1400mm, with pipe material being usually vitrified clay or asbestos cement for pipe sizes up to 300mm, and reinforced concrete for the rest. “Normal” inspections can also be done on newly laid sewers or on newly rehabilitated sewers (replacement by pipe bursting or lining of existing pipes).
- b) CCTV inspections done on “impassable” sewers where normal cameras cannot pass even after one or two cleaning attempts. Such inspections would call for alternative smaller than “normal” cameras. These cameras can be still tractorized or can be push/pull type cameras with some sort of distancing device (sleigh, brushes, packing).
- c) Where it is not possible to complete “normal” inspections from manhole to manhole and where a lack of sufficient data or lateral positions from as-built plans exist, “special” inspections with the aim of locating laterals will be called for. The contractor can make use of push/pull CCTV inspections down laterals, specialist radio detection equipment, ground penetrating radar or any other suitable and effective means.
- d) Inspections of laterals before replacement of main sewers. Where there is evidence of broken laterals, water infiltration from a lateral or root ingress from a lateral while a mainline sewer inspection is being carried out for the first time, the Contractor shall advise the Employer’s Agent of this. The Employer’s Agent will then instruct the Contractor with regards to lateral inspections on specific sections of the mainline sewer.
- e) Inspections of laterals to determine the connection position. These inspections will be carried out with or without integrated radio detection equipment.

#### **PA 2       INTERPRETATIONS**

##### PA 2.1       REFERENCES

###### PA 2.1.1    Supporting Specifications

The following specifications shall, inter alia, form part of the contract document.

- a)           Particular specification: PA – CLEANING OF SEWERS

##### PA 2.2       APPLICATION

The specification contains clauses that are generally applicable to sewer maintenance.

##### PA 2.3       DEFINITIONS

For the purpose of this specification, the following definitions and abbreviations shall apply.

###### PA 2.3.1    Normal inspections

CCTV inspections carried out using a tractorized camera fit for the purpose and having external dimensions, including the tractor, not exceeding 10.5cm wide, 57cm long and 10cm high with wheels for inspecting a 150mm diameter pipe fitted (10cm for 100mm pipe).



**PA 3 MATERIALS**

Not Applicable.

**PA 4 EQUIPMENT**

The Contractor shall provide all equipment that is necessary to clean the sewers that need to be assessed, if necessary, and to verify that the sewers have been cleaned correctly.

**PA 4.1 MAINLINE CCTV INSPECTIONS**

The contractor must give full details on his equipment, and his compliance or otherwise with all relevant specifications.

**PA 4.1.1 Camera on tractor**

The camera must be transported through the pipe on a tractor system, to allow for smooth transportation of the camera through the pipe. The tractor must be controllable at various speeds in forward and reverse and must be able to operate in pipes from 150mm diameter and larger. The tractor speed must be displayed on the video at all times and should never exceed speeds as specified in Clause 7.2.4.

The camera mounted on the tractor must be mounted in such a manner as to transport the camera within 10% of the centre of the pipe.

All inspections must be done with a pan-and-rotate camera. The pan-and-rotate camera must have the ability to execute "pre-programmed" commands for effective and efficient scanning of joints. The system must have the capability to down load to the database, the cameras relevant viewing angles. The camera must be fully remote controlled including remote focus, iris and light control. The camera must pan and rotate to view all critical incidents and laterals.

**PA 4.1.2 Camera vehicles**

All CCTV inspection equipment shall be neatly compartmentalized and transported in a suitable vehicle.

All vehicles must have the ability to determine their current location (x, y GPS position of the vehicle on site) in order to be able to verify the correct inspection manhole in conjunction with the GIS co-ordinates (preferably the measured co-ordination or, if not available, the approximate co-ordinates as captured on the GIS from as-built information).

**PA 4.1.3 Inspection range**

The Contractor shall ensure that the equipment used has a minimum range of inspection of 180m allowing for 2 manhole lengths.

**PA 4.1.4 Flow control equipment**

The Contractor shall have a range of flow control equipment to be able to block pipe diameter from 100mm – 600mm diameter. He shall also provide suitable pumping equipment in event of need for overpumping.

Refer to 5.4.

**PA 4.2 LATERAL CCTV INSPECTIONS****PA 4.2.1 Scope of Work**

The following types of lateral inspections may be undertaken:

- a) Inspections on laterals before replacement of main pipe.

When there is evidence of broken laterals, water infiltration from a lateral or root infiltration from a lateral, while a mainline inspection is being done for the first time, the Contractor shall advise the Employer's Agent of this. The Employer's Agent will then instruct the Contractor with regards to lateral inspections on specific sections of the mainline sewer.

b) Inspections on laterals to determine the connection position.

These inspections will be done with or without integrated radio detection equipment.

c) Inspections on laterals after replacement/rehabilitation of mainline sewers.

This will be done for quality control.

#### PA 4.2.2 Camera equipment

The Contractor shall make use of a push-pull type camera (ELS) with distancing device (sleigh, brushes, packing). The camera alone will have maximum dimensions of 70mm x 100mm long. The camera must produce a colour image and can be fixed-focus forward looking. The flexible rod spool will have 100m capacity and the system should be able to negotiate 90 degree bends in 100mm private drains. On average the system should be able to negotiate at least 50m in a 100mm house drain.

The camera control unit must be portable and equipped with an integrated video unit. Video recordings must be made.

#### PA 4.2.3 Flow control equipment

This will not normally be necessary on laterals, provided the Contractor can make suitable arrangements with house owners, but the equipment should be at hand to ensure a dry inspection.

### PA 4.3 HEALTH AND SAFETY EQUIPMENT

The Contractor will be working on live sewers and shall especially be required to observe those sections of the Occupational Health and Safety Act (Act 85 of 1993) and Construction Regulations which deal with working in confined spaces and dealing with hazardous gases. All manholes and sewers shall be tested for hazardous gases on a continuous basis to ensure worker safety. The Contractor shall ensure the necessary functional gas testing equipment and breathing apparatus is available on site at all times.

The following equipment shall be provided in each vehicle as a minimum:

- Oxygen deficiency and hazardous gas monitors, regularly serviced and operable.
- Fresh air breathing apparatus, including full face mask and demand valve with 10 minutes compressed air supply.
- Approved vertical lift full safety harness.
- Personal equipment per operative:
  - Safety helmet
  - Safety boots
  - Sewer wading boots
  - Disposable protective gloves
  - Safety goggles
  - Bright coloured overalls with fluorescent overjackets or belts to be worn at all times, day or night
  - Ear protection for noise
- Correct size First Aid Kit suitable for the number of operatives per unit.
- Facilities for washing to include:

- Soft soap
  - Disinfectant
  - Clean water
- Radio Equipment and cellular phone for on-site communication.
  - Fire extinguisher.

The Contractor shall provide all other personal safety equipment and facilities as required by Regulation 2 of the General Safety Regulations of the Occupational Health and Safety Act (Act 85 of 1993).

Each inspection vehicle shall be provided with one amber flashing beacon, which shall comply with and be operated in accordance with the Road Vehicle Lighting Regulations.

## **PA 5 OPERATING REQUIREMENTS**

### **PA 5.1 SEQUENCE OF INSPECTIONS**

The sequence of inspections will be at the Contractor's discretion. The Contractor should not however spread his operations over too many areas. He should endeavour to concentrate in one area at a time and to finish one suburb or drainage area before commencing inspections in the next. The Employer's Agent will from time to time instruct the Contractor in this regard.

### **PA 5.2 ACCESS TO PROPERTIES**

The Contractor's attention is drawn to legal requirements regarding access to private properties and he should make all reasonable arrangements in this regard. The Employer is not responsible for any failure on the Contractor's part to gain access to properties. The Contractor will be expected to respect privacy and to make prior arrangements if necessary. The Contractor will be expected to always show official approved identification / letters of introduction before gaining access to private properties. A letter from the Employer to the property owner, authorizing the Contractor to obtain access, will be provided where necessary.

### **PA 5.3 INSPECTION PROCEDURE**

All distances (in meters) measured by the camera must be from manhole centre to manhole centre starting at zero at the start manhole. Each inspection must be registered from a manhole, i.e. the contractor may not inspect from one manhole through an intermediate manhole to another manhole without entering the intermediate manhole's data and report.

### **PA 5.4 PROCEDURE FOR BLOCKING SEWERS**

The flow in some sewers may be too great to properly assess the condition of the sewer and in these cases the Contractor will need to control the flow by blocking the sewer or by overpumping.

The contractor may not block sewers without the prior written permission of the Employer's Agent. In addition, any flow control measures that are required for sewers greater than 250mm diameter shall be discussed and agreed to with the Employer's Agent beforehand.

## **PA 6 TOLERANCES**

### **PA 6.1 GENERAL**

The standards and tolerances laid down in this specification shall be adhered to in all cases and at all times, unless the standards used by the Contractor are to a higher standard as approved by the Employer's Agent. In all cases where the Contractor deviates from the specified standards, the Employer's Agent shall be informed in writing and only after written acceptance by the Employer's Agent can the alternative standards be used.

### **PA 6.2 LINEAR MEASUREMENT**

The CCTV monitor display shall incorporate an automatically updated distance record in meters and tenths of meters of the camera location within the pipelines accurate to + 1% or 0.3m whichever is the lesser.

The distance measurement entered onto the display at the start of the survey must represent the actual distance from the accepted start of the length of sewer or pipeline. This therefore requires that the distance measurement can be zeroed from the control console as well as the ability to enter any distance that may be required. The distance measurement shall start to register immediately the camera starts to move.

The Contractor shall ensure that precise location of defects or missing manholes can be made from the surface to a depth of at least 6m. **The Contractor shall be held liable for any inaccuracies in linear measurement beyond the allowed tolerances resulting in extra excavation, delays etc.** The accuracies of linear measurement shall be checked by plotting laterals (as inspected) and laterals (as-built) on a thematic map as described in Clause 3.3. In addition, the Contractor shall be required from time to time to double inspect at random if the Employer is not satisfied as to the linear accuracy by comparison between inspections before cleaning with inspections after cleaning and inspections after cleaning.

In addition, if on any specific section of pipe to be rehabilitated, laterals marked out according to CCTV reports are not found within the tolerances specified, then the CCTV contractor will be asked to re-inspect at his cost, with radiosonde attached to the camera and to mark the position of laterals on the surface.

#### PA 6.3 SLOPE MEASUREMENT

The camera system must be capable of measuring the slope of the pipe being inspected. The instantaneous angle must be filtered and is to be displayed on the screen and recorded on DVD. Raw inclinometer data is also to be stored for downloading to the database for the purpose of pipe profiling. The camera system must be capable of downloading to the database, no less than three readings per meter of pipe inspected.

Where available, as-built slopes of sewerage pipes to be inspected will be provided to the Contractor. The as-built slopes must be inputted into the database by the Contractor in order to enhance the accuracy of the resultant vertical alignment of the sewer.

The as-built line on the Themic Maps must be surrounded by buffer zones in different colours or shades representing at least where critical backfalls would start (where a critical backfall represents an invert level deviation of more than 50% of the internal diameter).

In addition, start and end backfall incidents must be displayed on the pipeline profile and the "depth" of backfall (fall in invert level) must be computed and displayed.

The start and end of a critical backfall as determined by inclinometer must be fed to the database and logged as an incident.

The system must be able to import and display manhole cover reduced levels (when available). This together with design / as-built slopes and manhole depths determined at manhole inspections can then be used to control the accuracy of inclinometer readings displayed as pipeline profiles / control the value of as-built slopes etc. The measured manhole depths, design / as-built slope, manhole cover reduced levels or difference in reduced levels must all be displayed.

#### PA 6.4 DATA DISPLAY (VIEWED ON THE MONITOR SCREEN AND DVD)

A data generator shall electronically generate and clearly display on the viewing monitor and video recording a continuous record of data in an alpha numeric form containing the following minimum information:

- a) Automatic update of the camera's position (in meters) in the pipeline from adjusted zero to relevant point.
- b) Pipe diameter
- c) Pipeline, location, road name and manhole reference numbers.
- d) Instantaneous angle and upstream/downstream direction of inspections
- e) Date and time

The size and position of all text, including distance, must be such that it can be adjusted or moved anywhere on the screen, so as not to interfere with the main subject of the picture.

The text generator must have a function that will remove and replace all data on screen so as to allow an unobstructed view of the entire screen when required.

The text generator shall have a real time clock and calendar on screen to indicate the progress on the survey.

#### PA 6.5 LINEAR MEASUREMENT

A calibrated flexible rod system will be acceptable for laterals.

#### PA 6.6 DATA DISPLAY

The data generator shall display at least the pipe number, suburb, street name, street number and erf number.

### PA 7 TESTING/QUALITY CONTROL

#### PA 7.1 PICTURE QUALITY (MINIMUM STANDARDS)

The electronic systems, television camera and monitor, shall provide a live picture of not less than 400 lines definition in real full colour and with no interference. The pictures shall be sufficiently sharp so that any fault can be seen clearly.

Pan-and-rotate cameras must have adjustable focus. The adjustment of focus and iris shall provide a focal range from 3mm to infinity with at least 62° angle of view lens. The distance along the pipe in focus from the initial point of observation shall be a minimum of twice the vertical height of the pipe.

The combination of object illumination and light sensitivity of the camera shall be adequate to obtain an effective picture of the structure of the sewers or pipelines to be surveyed without loss of contrast or flare out of picture or shadowing.

The camera system must provide lighting to illuminate the pipe sufficiently to allow for the detection of cracks and other structural defects in the pipe. The lighting must be of such a nature that the natural colour of the pipe is recorded (No black & white CCTV will be acceptable).

Suitable test devices shall be provided and be available throughout the contract. to enable practical demonstration of the systems abilities.

For colour tube type cameras, the test card shall be the Marconi Regulation Chart No 1 or equivalent with a colour bar, clearly defined with no tinting to show the following:

- White
- Yellow
- Cyan
- Green
- Magenta
- Red
- Blue
- Black

The camera shall be positioned centrally and parallel to the test card at a distance where the full test card just fills the monitor screen. The card shall be illuminated evenly and uniformly without any reflection.

The electronic systems, television camera and monitor shall be of such quality as to enable the following to be achieved:

#### PA 7.1.1 Shades of grey

The grey scale shall show equal changes in brightness ranging from black to white with a minimum of five stages.

#### PA 7.1.2 Linearity

A background grid shall show squares of equal size, without convergence / divergence over the whole of the picture. The centre circle should appear round and have the correct height / width relationship.

#### PA 7.1.3 Resolution

For colour tube type cameras, the live picture shall be capable of registering a minimum of 400 lines and must be clearly visible with no interference. The resolution shall be checked with the monitor colour turned down.

#### PA 7.1.4 Colour

For colour CCTV, with the monitor control adjusted for correct saturation, the six colours plus black and white shall be clearly resolved with the primary and complementary colours in order of decreasing luminance. The grey scale shall appear in contrasting shades of grey with no tint.

#### PA 7.1.5 Colour contrasting

For colour CCTV, to ensure the camera shall provide similar results when used with its own illumination source, the lighting shall be fixed in intensity prior to commencing the survey and the white balance set to the colour temperature emitted. In order to ensure colour constancy, ideally no variation in illumination shall take place during the survey.

The contractor shall include with his tenders submission, a DVD medium of at least 100m of sewer filmed with equipment intended for use on this contract. If the tender is accepted, these shall define the required standard of picture quality for the contract. Where the Employer's Agent rejects any survey pictures, the Contractor shall take remedial action to provide that survey file of an acceptable standard.

### PA 7.2 REPORTING

#### PA 7.2.1 Inspection standards

An shortened version with photographs shall be within the operator's sight within all times.

#### PA 7.2.2 CCTV Operator Standards

All CCTV operators must be able to present certification on request that they have at least two years post qualification experience and have within the last two months successfully completed a CCTV Operator Training / Revision Course.

#### PA 7.2.3 Reporting accuracies

The Contractor shall maintain the following accuracies:

- Header accuracy: 100%
- Incident and grading accuracy: 90%

Operations are to be checked at random by a nominated person on the Contractors staff as to accuracy of reporting. The results of these checks shall be presented to the Employer's Agent at 3 monthly intervals.

#### PA 7.2.4 Maximum camera speeds

The maximum camera speeds wherefrom reporting is done shall be:

- 0,1 m/s for normal inspections on existing pipes 200mm in diameter and smaller.
- 0,15 m/s for normal inspections on existing pipes greater than 200mm in diameter



- 0,2 m/s for inspections on newly laid or newly replaced / rehabilitated pipes

**PA 7.3 QUALITY ASSURANCE PLAN**

**PA 7.3.1 General**

The Contractor must have a responsible person in his organisational setup in overall charge of the CCTV and cleaning operations. This person will have an overall quality control monitoring function as part of his duties.

The Contractor shall prepare a quality plan as a means of ensuring that product conforms to specified requirements. The Contractor shall define and document how the requirements for quality will be met.

The Contractor shall identify and plan for the processes which directly affect quality and shall ensure that these processes are carried out under controlled conditions. Controlled conditions shall include the following:

- a) Documented procedures, where the absence of such procedures could adversely affect quality.
- b) Use of suitable equipment, and a suitable working environment.
- c) Compliance with reference standards / codes, quality plans and / or documented procedures.
- d) Monitoring and control of suitable process parameters and product characteristics as detailed in this standard.
- e) Suitable maintenance of equipment to ensure continuing process capability.

Records shall be maintained for qualified processes, equipment and personnel, as appropriate.

**PA 7.3.2 Verification of the Quality Process**

The Contractor shall establish and maintain documented procedures to verify that the specified quality requirements are met. The required verification and the records to be established, shall be detailed in the quality plan or documented procedures.

**Control of Inspection, Measuring and Test Equipment**

The Contractor shall establish and maintain documented procedures to control, calibrate and maintain inspection, measuring and test equipment (including test software) used by the supplier to demonstrate the conformance of product to the specified requirements, inspection, measuring and test equipment shall be used in a manner which ensures that the measurement uncertainty is known and is consistent with the required measurement capability.

The Contractor shall

- a) Identify all inspection, measuring and test equipment that can affect product quality, and calibrate and adjust them at prescribed intervals, or prior to use, against certified equipment having a known valid relationship to internationally or nationally recognised standards. Where no such standards exist, the basis used for calibration shall be documented.
- b) Maintain calibration records for inspection, measuring and test equipment.

**PA 8 MEASUREMENT AND PAYMENT**

**PA 8.1 BASIC PRINCIPLES**

In addition to those aspects covered by 8.2 below, CCTV camera inspections will be held to be fully covered by the tendered sum or rate for that item. In the case of all scheduled items below, the rates tendered will be deemed to include all after hours working and security guarding and protection that may be required.

**PA 8.2 SCHEDULED ITEMS**

**PA 8.2.1 Closed-Circuit Pan-and-Rotate Television Inspection of sewer lines ..... Unit: m**

The unit of measurement shall be the linear meter of each diameter of pipe inspected measured centre to centre of adjacent manholes or to the stopping point, whichever is applicable.

The tendered rate shall include full compensation for, inter alia, the CCTV inspection of lengths of sewer lines after cleaning, as specified, and for any other related activity such as manhole inspections, reporting etc.

Measurement for the payment of inspections will be certified only after the cleaning of sewer have been approved by the Employer's Agent.

## PARTICULAR SPECIFICATION: PB

### PB ENVIRONMENTAL MANAGEMENT (COMPREHENSIVE)

#### **PB 1 SCOPE**

This Specification covers the requirements for controlling the impact of construction activities on the environment. It contains clauses that are generally applicable to the undertaking of civil engineering works in areas where it is necessary to impose pro-active controls on the extent to which the construction activities impact on the environment.

This Particular Specification, which forms an integral part of the contract documents, informs the contractor as to his duties in the fulfilment of the project objectives, with particular reference to the prevention and mitigation of environmental impacts caused by construction activities associated with the project. The contractor should note that obligations imposed by the Particular Specification are legally binding in terms of this contract. In the event that any rights and obligations contained in this Particular Specification contradict those specified in the standard or project specifications then the latter shall prevail.

All construction activities shall observe any relevant environmental legislation and in so doing shall be undertaken in such a manner as to minimise impacts on the natural and social environment.

#### **PB 2 NORMATIVE REFERENCES**

##### **PB 2.1 SUPPORTING REFERENCES**

Where this Specification is required for a project the following specifications shall, inter alia, form part of the Contract Document.

- a) SANS 1200 Series of Standardized Specifications;
  - i) SANS 1200 A or SANS 1200 AA, as applicable;
  - ii) SANS 1200 C;
  - iii) SANS 1200 D.
- b) Particular Specification PC (Occupational Health and Safety),
- c) SASTT-TS-TT2: Trenchless Construction Works – Part TT2: Pipe Bursting
- d) Construction Regulations, 2014, and
- e) Standards listed in Appendix A. <sup>1</sup>

#### **PB 3 DEFINITIONS**

For the purposes of this Specification the definitions and abbreviations given in the applicable specifications listed in 2.1 and the following definitions shall apply:

##### **Environment:**

The surroundings within which humans exist and that are made up of:

- i) the land, water and atmosphere of the earth;
- ii) micro-organisms, plant and animal life;
- iii) any part or combination of (i) and (ii) and the interrelationships among and between them; and
- iv) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

##### **Environmental Authorisation:**

A written statement from the National Department of Environmental Affairs (DEA) or relevant provincial department with the general and specific conditions and the EMP recording its approval of an application for a

<sup>1</sup> See Appendix A

planned undertaking that triggers listed activities in the Environmental Impact Assessment (EIA) regulations of the National Environmental Management Act (NEMA No.107 of 1998).

**NEMBA:**

Means the National Environmental Management Biodiversity Act,2004 (No 10 of 2004)

**Potentially hazardous Substance:**

A substance that, in the reasonable opinion of the Employer's Agent, can have a deleterious effect on the environment as contemplated in the South African National Standard (SANS 10234).

**Method Statement:**

A written submission by the Contractor to the Employer's Agent in response to the Specification or a request by the Employer's Agent, setting out the plant, materials, labour and method the Contractor proposes using to carry out an activity, identified by the relevant specification or the Employer's Agent when requesting the Method Statement, in such detail that the Employer's Agent is enabled to assess whether the Contractor's proposal is in accordance with the Specifications and/or will produce results in accordance with the Specifications.

The Method Statement shall cover applicable details with regard to: construction procedures, materials and equipment to be used, transportation of equipment/materials to and from site, movement of equipment/material on site, storage of materials on site, containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur, timing and location of activities, areas of non-compliance with the Specifications, and any other information deemed necessary by the Employer's Agent.

**Reasonable :**

Unless the context indicates otherwise, reasonable in the opinion of the Employer's Agent after he has consulted with a person, not an employee of the Employer, suitably experienced in "environmental implementation plans" and "environmental management plans" (both as defined in Act No107,1998).

**Solid waste:**

All solid waste, including construction debris, chemical waste, excess cement/concrete, wrapping materials, timber, tins and cans, drums, wire, nails, food and domestic waste (e.g. plastic packets and wrappers).

**Contaminated water:**

Water contaminated by the Contractor's activities, e.g. concrete water and runoff from plant/personnel wash areas.

**Topmaterial :**

Topsoil is considered to be the natural soil covering, including all the vegetation and organic matter. Depth may vary at each site but in general it is considered to be the top 150 mm of soil (topsoil) and root material of cleared vegetation. Topsoil should be identified via simple soil tests.

**Water Course:**

A water course is defined as:

- a) A river or spring;
- b) A natural channel or depression in which water flows regularly or intermittently;
- c) A wetland, lake or dam into which, or from which, water flows; and
- d) Any collection of water which the Minister may, by notice in a Gazette, declare to be a watercourse as defined in the National Water Act, 1998 (Act No. 36 of 1998).

A reference to a watercourse includes, where relevant, its bed and banks.

**Wetland:**

Land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.

**PB 4 LEGAL REQUIREMENTS**

Construction shall be according to the best industry practices, as identified in the project documents.

**PB 4.1 Statutory and other applicable legislation**

In addition to this Particular Specification it is necessary for the Contractor to be conversant with all legislation pertaining to the environment, including provincial and local government ordinances, which may be applicable to the contract.

Major environmental legislation, as amended from time to time, includes but is not limited to the following:

- (a) The Constitution Act (No. 6 of 1996)
- (b) National Environmental Management Act (NEMA) (No. 107 of 1998)
- (c) National Environmental Management: Air Quality Act (No. 39 of 2004) and Atmospheric Pollution Prevention Act (No. 45 of 1965)
- (d) National Environmental Management: Biodiversity Act (No. 10 of 2004)
- (e) National Environmental Management: Protected Areas Act (No. 57 of 2003)
- (f) National Environmental Management: Waste Act (No. 59 of 2008)
- (g) National Forests Act (No. 84 of 1998)
- (h) National Heritage Resources Act (No. 25 of 1999)
- (i) National Water Act (No. 36 of 1998)
- (j) Conservation of Agricultural Resources Act (No. 43 of 1983)
- (k) Mineral and Petroleum Resources Development Act (No. 28 of 2002).
- (l) Environment Conservation Act (No. 73 of 1989)
- (m) Mineral and Petroleum Resources Development Act (No. 28 of 2002)
- (n) National Environmental Management: Integrated Coastal Management Act (No. 24 of 2008)
- (o) Sea-Shore Act (No. 21 of 1935)
- (p) National Veld and Forest Fire Act (No. 101 of 1998)
- (q) National Parks (Act 57 of 1976) repealed by the NEMA Protected Areas Act (No. 57 of 2003)
- (r) Environment Conservation Act (No. 73 of 1989) (Noise Control Regulations)

**PB 5 ADMINISTRATION OF ENVIRONMENTAL OBLIGATIONS**

Copies of this Particular Specifications EMA, forming part of contract documentation, shall be kept at the site office and must be distributed to all senior contract personnel who must familiarise themselves with its contents.

Implementation of this document requires the involvement of several stakeholders, each fulfilling a different but vital role as outlined herein, to ensure sound environmental management during the construction phase of a project.

- a) The Employer

The Employer is the holder of Environmental Authorisation(s) issued by the relevant competent regulating authorities. Compliance with the requirements of the various Authorisations is the responsibility of the Employer. Anyone acting on the Employer's behalf is accountable for the compliance with the Authorisation and to manage potential impacts of the activities.

- b) The Employer's Agent

The Employer's Agent is the person appointed by the Employer, who acts as the Employer's on-site implementing agent and carries the responsibility to ensure that the Contractor undertakes

construction activities in such a way as to not contravene the requirements set out in the Environmental Authorisation(s) issued for the contract.

c) The Contractor

The Contractor is responsible for project delivery in accordance with the prescribed contract data, among which this Particular Specifications EMA shall be included.

The Contractor shall receive and implement any instruction issued by the Employer's Agent relating to compliance with the Particular Specifications EMA including the removal of personnel and/or equipment.

Compliance with the provisions contained herein or any condition imposed by the environmental approvals shall become the responsibility of the contractor through an approved ESO. The Contractor shall nominate a person from among his site personnel to fulfil this function and submit to the Employer's Agent for his approval the curriculum vitae of the proposed ESO. This request for approval shall be given, in writing, at least fourteen days before the commencement of any construction activity clearly setting out reasons for the nomination, and with sufficient detail to enable the Employer's Agent to make a decision.

d) Environmental Site Officer (ESO)

Once a nominated representative of the Contractor has been approved by Employer's Agent he/she shall fulfil the role ESO and shall be the responsible person for ensuring that the provisions of this Particular Specifications EMA are complied with, in accordance with various method statements, during the life of the contract. The ESO shall submit regular written reports to the Employer's Agent, but not less frequently than once a month.

As a minimum the ESO shall have an accredited tertiary qualification in environmental or natural sciences or equivalent. Alternatively, the ESO shall have a minimum of 2 years' experience in a similar role in construction or other environmental regulatory field.

(e) Environmental Control Officer (ECO)

The Environmental Control Officer (ECO) is an independent environmental specialist nominated by the Employer's Agent to objectively and regularly monitor the contractor's implementation of this Particular Specifications EMA and the Environmental Management Programme (EMPr) as may be determined by the sensitivity of the project or by conditions of authorisations.

The ECO will act as the Employer's Agent's representative and will report to the relevant authority in a format as prescribed in NEMA 2014 Regulations. The ECO will have the authority to appoint any specialist to conduct an audit and advise on contraventions as deemed reasonable.

## **PB 6 REQUIREMENTS**

### **PB 6.1 MATERIALS**

#### **PB 6.1.1 Materials handling, use and storage**

The Contractor shall ensure that any delivery drivers are informed of all procedures and restrictions (including "no go" areas) required to comply with the Specifications. The Contractor shall ensure that these delivery drivers are supervised during off loading, by someone with an adequate understanding of the requirements of the Specifications.

Materials shall be appropriately secured to ensure safe passage between destinations. Loads including, but not limited to sand, stone chips, fine vegetation, refuse, paper and cement, shall have appropriate cover to



prevent them spilling from the vehicle during transit. The Contractor shall be responsible for any clean-up resulting from the failure by his employees or suppliers to properly secure transported materials.

#### PB 6.1.2 Hazardous substances

Procedures detailed in the Material Safety Data Sheets (MSDSs) shall be followed in the event of an emergency situation.

Petroleum, chemicals, harmful and hazardous waste shall be stored in an enclosed and banded area. This area shall be subject to the approval of the Employer's Agent. The waste shall be disposed of at a hazardous waste disposal site as approved by the Employer's Agent.

##### PB 6.1.2.1 Shutter oil and curing compound

Shutter oil and curing compound pose a risk of causing water and soil contamination and accordingly are regarded as potential hazardous substances. The Contractor shall ensure that shutter oil and curing compound containers in use are stored within the fuel bund. The remaining containers shall be inspected regularly to ensure that no leakage occurs. When shutter oil or curing compound is dispensed, the proper dispensing equipment shall be used, and the storage container shall not be tipped in order to dispense the oil/compound. The dispensing mechanism of the shutter oil/curing compound storage container shall be stored in a waterproof container when not in use.

Shutter oil and curing shall be used in moderation and shall be applied under controlled conditions using appropriate equipment. The Contractor shall take all reasonable precautions to prevent accidental and incidental spillage during the application of these compounds.

In the event of a shutter oil or curing compound spill, the source of the spillage shall be isolated, and the spillage contained. The Contractor shall clean up the spill, either by removing the contaminated soil or by the application of absorbent material in the event of a larger spill. Treatment and remediation of the spill area shall be undertaken to the reasonable satisfaction of the Employer's Agent.

##### PB 6.1.2.2 Bitumen

The Employer's Agent shall be advised of the area that the Contractor intends using for the storage of bitumen drums/ products. The storage area shall have a smooth impermeable (concrete or 250 µm plastic covered in sand) floor. The floor shall be banded and sloped towards a sump to contain any spillages of substances. The bund shall be inspected and emptied daily, and serviced when necessary. The bund shall be closely monitored during rain events to ensure that it does not overflow.

#### PB 6.2 PLANT

##### PB 6.2.1 Ablution facilities

1. The Contractor shall ensure that all chemical toilets are secured by four anchor posts, driven 300mm into the soil and secured by two strands of 5mm wire looped through appropriately installed holds on the structure.
2. In sandy soil the Contractor shall ensure that all chemical toilets are secured by four anchor posts, consisting of sand bags buried to 300mm and secured by two strands of 5mm wire looped through appropriately installed holds on the structure.
3. In Addition to toilets, the Contractor shall construct a dedicated urinal area as per drawing 6.1.2.

The Contractor shall ensure that no spillage occurs when the toilets are cleaned or emptied and that the contents are properly stored and removed from Site. Discharge of waste from toilets into the environment and burial of waste is strictly prohibited. The Contractor shall prevent any littering on site and ensure that staff disposes of all litter (including leftover foodstuff) in the bins provided.

Washing, whether of the person or of personal effects and acts of excretion and urination are strictly prohibited other than at the facilities provided.

#### PB 6.2.2 Solid waste management

The Contractor shall provide sufficient bins with lids on Site to store the solid waste produced on a daily basis. Solid, non-hazardous waste shall be disposed of in the bins provided and no on-site burying, dumping or burning of any waste materials, vegetation, litter or refuse shall occur. Bins shall not be allowed to become overfull and shall be emptied a minimum of once daily. The waste may be temporarily stored on Site in a central waste area that is weatherproof and scavenger-proof, and which the Employer's Agent has approved in terms of relevant Guidelines for Waste transfer stations.

The Contractor shall take all necessary steps to reclaim waste for recycling and further use. The temporary storage facility should allow for separate storage of recyclable materials as required by the Employer's Agent.

All solid waste shall be disposed of offsite at an approved landfill site. The Contractor shall supply the Employer's Agent with a certificate of disposal.

#### PB 6.2.3 Contaminated water

The Contractor shall set up a contaminated water management system, which shall include collection facilities to be used to prevent pollution, as well as suitable methods of disposal of contaminated water. The Contractor shall prevent the discharge of water contaminated with any pollutants, such as soaps, detergent, cements, concrete, lime, chemicals, glues, solvents, paints and fuels, into the environment.

The Contractor shall notify the Employer's Agent immediately of any pollution incidents on Site. The Employer's Agent's approval is required prior to the discharge of contaminated water to the Municipal sewer system.

#### PB 6.2.4 Site structures

All site establishment components (as well as equipment) shall be positioned to limit visual intrusion on neighbours and the size of area disturbed. The type and colour of roofing and cladding materials to the Contractor's temporary structures shall be selected to reduce reflection and colours should be visually non-intrusive.

#### PB 6.2.5 Noise control

The applicable regulations framed under the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993), and the provisions of SANS 1200 A Subclause 4.1 regarding "built-up areas" shall apply to all areas within audible distance of residents whether in urban, peri-urban or rural areas.

1. In addition to OHSA, the Contractor will ensure any areas indicated as no noise zones (see drawings) are excluded from any noise activities.
2. In addition to OHSA, the Contractor will ensure all necessary environmental sensitivity to noise is adhered to.
3. Appropriate directional and intensity settings are to be maintained on all hooters and sirens. The Contractor shall provide and use suitable and effective silencing devices for pneumatic tools and other plant such that the noise level in residential areas and dwellings adjacent to the work areas will not increase by more than 7 dB(A)Leq 60 above residual background sound levels. Similarly, in areas adjacent to residential access roads maximum noise levels shall not exceed 60 dB(A)Leq 60 and maximum sound pressure level of 70 dB(A).

Where excess noise generation is unavoidable, the Contractor shall, by means of barriers, effectively isolate the source of any such noise in order to comply with the said regulations. The Contractor shall restrict any of his operations that may result in undue noise disturbance to those communities and dwellings abutting the Site to the hours of 08:00 to 17:00 on weekdays and Saturdays. No work will be permitted on Sundays unless otherwise agreed to with the Employer's Agent.

No amplified music shall be allowed on Site. The use of radios, tape recorders, compact disc players, television sets etc. shall not be permitted unless the volume is kept sufficiently low as to avoid any intrusion on members of the public within range. The Contractor shall not use sound amplification equipment on Site unless in emergency situations.

#### PB 6.2.6 Lights

The Contractor shall ensure that any lighting installed on the site for his activities does not interfere with road traffic or cause a reasonably avoidable disturbance to the surrounding community or other users of the area.

#### PB 6.2.7 Fuel (petrol and diesel) and oil

The Contractor will not be allowed to store any fuel on site and must make relevant arrangements in this regard.

The Contractor may store fuel on site in an area approved by the Employer's Agent. The Contractor shall ensure that all liquid fuels (petrol and diesel) are stored in approved tanks or in bowsers. The tanks/bowsers shall be situated on a smooth impermeable surface (concrete) with a constructed bund as per OHS. The bund shall be impermeable and the volume inside the bund shall allow for the total capacity of all the storage tanks/ bowsers plus additional as per OHS. The bunded area shall be covered to protect it from rain.

##### a) Re-fuelling:

1. Where reasonably practical, plant shall be refuelled at the depot or at the workshop as applicable. If it is not reasonably practical, then the surface under the refuelling area shall be protected against pollution to the reasonable satisfaction of the Employer's Agent prior to any refuelling activities.
2. Provision shall be made for refuelling at the fuel storage area, by protecting the soil with a concrete/impermeable surface. The Contractor shall take cognisance of the limits set by NEMA EIA Regulations for the storage of fuels and acquire the necessary authorisation for storage capacity beyond these. All fuel shall be stored in a secure area in steel tanks supplied and maintained by the fuel suppliers. An adequate bund wall, 110% of volume, shall be provided for fuel and diesel areas to accommodate any leakage spillage or overflow of these substances. Any leakage, spillage or overflow of fuel shall be attended to without delay.

##### b) Storage:

1. Gas welding cylinders and LPG cylinders shall be stored chained in a secure, well-ventilated area exterior to any building wall.
2. The Contractor shall prevent unauthorised access into the fuel storage area. No smoking shall be allowed within the vicinity of the fuel storage area. The Contractor shall ensure that there is adequate fire-fighting equipment at the fuel stores.

##### c) Maintenance:

1. Used oil, lubricants and cleaning materials from the maintenance of vehicles and machinery shall be collected in a holding tank (in workshop areas a dedicated oil trap and holding tank, as per drawings, shall be constructed to collect contaminated water and separate oil). Oils collected in this manner, shall be retained in a safe holding tank and removed from site by a specialist recycling company. Oil collected by a mobile servicing unit shall be stored in a dedicated container or tank and discharge into the holding tank for collection and removal by the specialist recycling company.
2. All used filters shall be stored in a secure bin for disposal off site. Any contaminated soil shall be removed and replaced. Soils contaminated by oils and lubricants shall be collected and disposed of at a facility designated by the local authority to accept contaminated materials or may be treated on site as per instructions from the ECO.

##### d) Spillage:

1. The Contractor shall be responsible for all spills on site. The Contractor shall have a clear procedure in place to deal with spills. The Contractor shall contain the spill and immediately after discovering a spill report the incident to the Employer's Agent. The Employer's Agent will assess and advise on remediation and rehabilitation processes.
2. The Contractor shall rectify any pollution of a watercourse, including appointment of relevant specialist as agreed with the Employer's Agent.

#### PB 6.2.8 Workshop, equipment maintenance and storage

Leaking equipment shall be repaired immediately or removed from the Site. Where practical, all maintenance of equipment and vehicles on Site shall be performed off Site or in the workshop. If it is necessary to do maintenance outside of the workshop area, the Contractor shall obtain the approval of the Employer's Agent prior to commencing activities. The Contractor shall ensure that in his workshop and other plant maintenance facilities, including those areas where, after obtaining the Employer's Agent's approval, the Contractor carries out emergency plant maintenance, there is no contamination of the soil or vegetation. The workshop shall have a smooth impermeable (concrete or 250 µm plastic covered with sand) floor. The floor shall be bunded and sloped towards an oil trap or sump to contain any spillages of substances (e.g. oil).

When servicing equipment on site, drip trays shall be used to collect the waste oil and other lubricants. Drip trays shall also be provided in construction areas for stationary plant (such as compressors) and for "parked" plant (such as scrapers, loaders, vehicles). Drip trays shall be inspected and emptied daily. Drip trays shall be closely monitored during rain events to ensure that they do not overflow. Where practical, the Contractor shall ensure that equipment is covered so that rainwater is excluded from the drip trays.

The washing of equipment shall be restricted to urgent or preventative maintenance requirements only. All washing shall be undertaken off Site or in the workshop. The use of detergents for washing shall be restricted to low phosphate and nitrate containing, low sudsing-type detergents.

#### PB 6.2.9 Dust

The Contractor shall take all reasonable measures to minimise the generation of dust as a result of construction activities to the satisfaction of the Employer's Agent. The Contractor's dust management planning shall, as a minimum, take cognisance of the following:

- Schedule of spraying water on unpaved roads paying due attention to control of runoff.
- Speed limits for vehicles on unpaved roads and minimisation of haul distances.
- Measures to ensure that material loads are properly covered during transportation.
- Schedule for wheel cleaning and measures to clean up public roads that may be soiled by construction vehicles.
- Minimisation of the areas disturbed at any one time and protection of exposed soil against wind erosion, e.g. by dampening with water or covering with straw
- Location and treatment of material stockpiles taking into consideration prevailing wind directions and location of sensitive receptors.
- Controlled blasting techniques to minimise dust and fly rock during blasting.
- Adherence to the dust loads and protective gear stipulated in the Occupational Health and Safety Act.
- Reporting mechanism and action plan in case of excessive wind and dust conditions.
- The use of chemical or other stabilisation measures in case of water scarcity.

During summer, a water tanker shall be permanently available for the control of dust generation, and the Contractor shall ensure that the sprays do not generate excess run off. During winter, provision shall be made for a tanker, as required by the Employer's Agent.

During high wind conditions, the Contractor shall comply with the Employer's Agent's instructions regarding dust-damping measures. The Employer's Agent may request the temporary cessation of all construction activities where wind speeds are unacceptably high, and until such time as wind speeds return to acceptable levels.

Vehicle speeds should not exceed 20km/h on dirt roads or when traversing unconsolidated or non-vegetated areas. Contractors shall develop and implement a programme for the monitoring of dust fallout in areas where dust generation may be expected.

As required, the Contractors shall develop and implement a programme for the monitoring of dust fallout in areas where dust generation may be expected.

### PB 6.3 METHODS AND PROCEDURES

#### PB 6.3.1 Method Statements

Any Method Statement required by this Specification, the Specification Data or the Employer's Agent shall be produced within such reasonable time as is required by this Specification, the Specification Data or the Employer's Agent. The Contractor shall not commence the activity until the Method Statement has been approved. Except in the case of emergency activities, the Contractor shall allow a period of two weeks for approval of the Method Statement by the Employer's Agent. Such approval shall not unreasonably be withheld.

Method Statements in respect of environment management that shall be provided by the Contractor within 14 days of receipt of the letter of acceptance and prior to the activity covered by the Method Statement being undertaken, include:

- 1) Location and structure of the fuel storage site, including the type and volume of storage container and the design and capacity of the bund.
- 2) Solid waste (refuse) control and removal of waste from the Site, including the number, type and location of rubbish bins, the manner and frequency with which the waste will be removed from site and the disposal site.
- 3) Contaminated water management system, including an indication of the source and volume of contaminated water and how this would be disposed of.
- 4) Dust control, including methods to prevent dust generation and methods to reduce dust where its generation is unavoidable.
- 5) Location and layout of the construction camp in the form of a plan showing offices, stores for fuels and explosives, vehicle parking, access point, equipment cleaning areas and staff toilet placement.
- 6) Location of proposed site access routes and proposed traffic safety measures.
- 7) Emergency procedures for fire, and accidental leaks and spillages of hazardous materials.
- 8) Location, layout and preparation of cement/ concrete batching facilities including the methods employed for the mixing of concrete and the management of runoff water from such areas. An indication shall be given of how concrete spoil will be minimised and cleared.
- 9) Method of undertaking earthworks, including spoil management, erosion, dust and noise controls.
- 10) Motivation and method for undertaking any construction related activities within a "no-go" area, including requisite emergency procedures. Unless need clearly motivated and proposed methodology exhibits clear focus on environmentally sensitive construction practice, no activity will be permitted within the defined "no-go" areas.

- 11) Location, layout and preparation of cement/ concrete batching facilities including the methods employed for the mixing of concrete and the management of runoff water from such areas. An indication shall be given of how concrete spoil will be minimised and cleared.
- 12) Top material management and placement including rehabilitation planning. The contractor's programme shall clearly show the proposed rate of progress of the application of topsoil and grassing.

#### PB 6.3.2 Environmental awareness training

Within seven days of the Commencement Date, the Contractor's site staff including foremen and site management staff shall attend an environmental awareness training course, of approximately one-hour duration. The Contractor shall liaise with the Employer's Agent prior to the Commencement Date to fix a date and venue for the course. The Contractor shall provide a suitable venue with facilities as required by the Specification Data, and ensure that the specified employees attend the course.

No more than 20 people shall attend each course and the Contractor shall allow for sufficient sessions to train all personnel. Subsequent sessions shall be run for any new personnel coming onto site.

The environmental awareness training course shall be held in the morning during normal working hours. Any new employees coming on to site after the initial training course and the Contractor's suppliers and subcontractors shall also attend the course. Provision should also be made for quarterly refreshers courses to be undertaken during the course of the Contract. The Contractor shall ensure that all attendees sign an attendance register, and shall provide the Employer's Agent with a copy of the attendance register the day after each course.

#### PB 6.3.3 Construction personnel information posters

The Contractor shall erect and maintain information posters for the information of his employees depicting actions to be taken to ensure compliance with aspects of the Specifications. Such posters will be supplied by the Employer's Agent and shall be erected at a location specified by the Employer's Agent.

#### PB 6.3.4 Site clearance

The Contractor shall ensure that the clearance of vegetation is restricted to that required to facilitate the execution of the Works. Site clearance shall occur in a planned manner, and cleared areas shall be stabilised as soon as possible. The detail of vegetation clearing shall be to the Employer's Agent's approval. All cleared vegetation shall either be mulched and mixed into the topsoil stockpiles or disposed of at an approved disposal site. The disposal of vegetation by burying or burning is prohibited without the requisite permit from the local authority.

The Contractor shall strip the Topmaterial within the working areas. The Topmaterial shall be stockpiled separately from subsoil and used for subsequent rehabilitation and revegetation. Topmaterial stockpiles shall not be compacted.

Should fauna be encountered during site clearance, earthworks shall cease until fauna have been safely relocated.

#### PB 6.3.5 Site division

The Employer's Agent shall be advised of the area that the Contractor intends using for his site establishment. The Contractor's camp shall occupy as small an area as possible, and no site establishment shall be allowed within 50 m of any watercourse unless otherwise approved by the Employer's Agent.

The Contractor shall inform the Employer's Agent of the intended actions and programme for site establishment. The site layout shall be planned to facilitate ready access for deliveries, facilitate future works and to curtail any disturbance or security implications for neighbours.

#### PB 6.3.6 Site demarcation



As required by the Specification Data, the Contractor shall erect and maintain permanent and/or temporary fences of the type and in the locations directed by the Employer's Agent. Such fences shall, if so specified, be erected before undertaking designated activities.

#### PB 6.3.7 "No go" areas

If so required by the Specification Data, certain areas shall be considered "no go" areas. The Contractor shall ensure that, insofar as he has the authority, no unauthorised entry, stockpiling, dumping or storage of equipment or materials shall be allowed within the demarcated "no go" areas.

"No go" areas shall be demarcated with fencing consisting of wooden or metal posts at 3 m centres with 1 plain wire strand tensioned horizontally at 900 mm from ground level. Commercially available danger tape shall be wrapped around the wire strand. The Contractor shall maintain the fence for the duration of construction and ensure that the danger tape does not become dislodged.

#### PB 6.3.8 Protection of natural features

The Contractor shall not deface, paint, damage or mark any natural features (e.g. rock formations) situated in or around the Site for survey or other purposes unless agreed beforehand with the Employer's Agent. Any features affected by the Contractor in contravention of this clause shall be restored/ rehabilitated to the satisfaction of the Employer's Agent.

The Contractor shall not permit his employees to make use of any natural water sources (e.g. springs, streams, open water bodies) for the purposes of swimming, personal washing and the washing of machinery or clothes.

#### PB 6.3.9 Protection of flora and fauna

Except to the extent necessary for the carrying out of the Works, flora shall not be removed, damaged or disturbed nor shall any vegetation be planted without authorisation.

Trapping, poisoning and/ or shooting of animals is strictly forbidden. No domestic pets or livestock are permitted on Site.

Where the use of herbicides, pesticides and other poisonous substances has been specified, they shall be stored, handled and applied with due regard to their potential harmful effects.

#### PB 6.3.10 Protection of archaeological and palaeontological remains

The Contractor shall take reasonable precautions to prevent any person from removing or damaging any fossils, coins, articles of value or antiquity and structures and other remains of archaeological interest discovered on the Site, immediately upon discovery thereof and before removal. The Contractor shall inform the Employer's Agent immediately of such a discovery and carry out the Employer's Agents instructions for dealing therewith. All construction within the vicinity of the discovery shall cease immediately and the area shall be cordoned off until such time as the Employer's Agent authorises resumption of construction in writing.

The Employer's Agent will contact the relevant heritage authority.

#### PB 6.3.11 Access routes/ haul roads

Access to the Construction camp and working areas shall utilise existing roads or tracks. Entry/exit points onto public roads shall take cognisance of traffic safety. Traffic safety measures shall include appropriate signage and signalmen where relevant.

On the Site, and, if so required by the Specification Data, within such distance of the Site as may be stated, the Contractor shall control the movement of all vehicles and plant including that of his suppliers so that they remain on designated routes, are distributed so as not to cause an undue concentration of traffic and that all relevant laws are complied with. In addition such vehicles and plant shall be so routed and operated as to minimise disruption to regular users of the routes not on the Site. On gravel or earth roads on Site and within 500 m of the Site, the vehicles of the Contractor and his suppliers shall not exceed a speed of 20 km/h.

Aggregate, mud and sand deposited onto public roads by construction activities shall be cleared on a daily basis.

In case of a linear development or if no formal access road is required the Contractor will identify the access point and route, once the first vehicle has travelled this route the established tracks will become the dedicated tracks used for the project and vehicles may not deviate from these.

When using gravel roads, the Contractor shall maintain the integrity of the gravel road by dragging an instrument consisting of heavy-duty vehicle tyres behind an appropriate service vehicle on a weekly basis. Should any public or private road used by the Contractor deteriorate to the extent that it possesses a hazard to the public, the Contractor is to reinstate it to the original condition.

#### PB 6.3.12 Cement and concrete batching

Where applicable, the location of the batching plant (including the location of cement stores, sand and aggregate stockpiles) shall be as approved by the Employer's Agent. The concrete/cement batching plant shall be kept neat and clean at all times.

No batching activities shall occur directly on unprotected ground. The batching plant shall be located on a smooth impermeable surface (concrete or 250 µm plastic covered with 5 cm of sand). The area shall be bunded and sloped towards a sump to contain spillages of substances. All wastewater resulting from batching of concrete shall be disposed of via the contaminated water management system and shall not be discharged into the environment. Contaminated water storage areas shall not be allowed to overflow and appropriate protection from rain and flooding shall be implemented

Empty cement bags shall be stored in weatherproof containers to prevent windblown cement dust and water contamination. Empty cement bags shall be disposed of on a regular basis via the solid waste management system, and shall not be used for any other purpose. Unused cement bags shall be stored so as not to be affected by rain or runoff events. In this regard, closed steel containers shall be used for the storage of cement powder and any additives. The Contractor shall ensure that sand, aggregate, cement or additives used during the mixing process are contained and covered to prevent contamination of the surrounding environment.

The Contractor shall take all reasonable measures to prevent the spillage of cement/ concrete during batching and construction operations. During pouring, the soil surface shall be protected using plastic and all visible remains of concrete shall be physically removed on completion of the cement/ concrete pour and appropriately disposed of. All spoiled and excess aggregate/ cement/ concrete shall be removed and disposed of via the solid waste management system.

Where "readymix" concrete is used, the Contractor shall ensure that the delivery vehicles do not wash their chutes directly onto the ground. Any spillage resulting from the "readymix" delivery shall be immediately cleared and disposed of via the solid waste management system.

#### PB 6.3.13 Earthworks

All earthworks shall be undertaken in such a manner so as to minimise the extent of any impacts caused by such activities, particularly with regards to erosion and dust generation. No equipment associated with earthworks shall be allowed outside of the Site and defined access routes unless expressly permitted by the Employer's Agent.

#### PB 6.3.14 Pumping

Pumps shall be placed over a drip tray in order to contain fuel spills and leaks. The Contractor shall take all reasonable precautions to prevent spillage during the refuelling of these pumps.

The Contractor shall ensure that none of the water pumped during any dewatering activities, including well points, is released into the environment without the Employer's Agent's approval. The Employer's Agent's approval is required prior to the discharge of this water into the Municipal sewer system.

#### PB 6.3.15 Bitumen

Over spray of bitumen products outside of the road surface and onto roadside vegetation or the surrounding environment shall be prevented using a method approved by the Employer's Agent.

When heating bitumen products, the Contractor shall take cognisance of appropriate fire risk controls. Heating of bitumen products shall only be undertaken using LPG or similar zero emission fuels and appropriate fire fighting equipment shall be readily available.

Stone chip/gravel excess shall not be left on road / paved area verges. This shall be swept / raked into piles and removed to an area approved by the Employer's Agent.

Water quality from runoff from new/ fresh bitumen surfaces will be monitored visually by the Employer's Agent and remedial actions taken where necessary by the Contractor.

#### PB 6.3.16 Fire control

No fires may be lit on site. Any fires that occur shall be reported to the Employer's Agent immediately. Smoking shall not be permitted in those areas where it is a fire hazard. Such areas shall include the workshop and fuel storage areas and any areas where the vegetation or other material is such as to make liable the rapid spread of an initial flame. In terms of the Atmospheric Pollution Prevention Act (No. 45 of 1965), burning is not permitted as a disposal method.

The Contractor shall ensure that there is basic fire-fighting equipment available on Site at all times. This shall include at least rubber beaters when working in urban open spaces and fynbos areas, and at least one fire extinguisher of the appropriate type when welding or other "hot" activities are undertaken.

#### PB 6.3.17 Emergency procedures

The Contractor's procedures for the following emergencies shall include:

##### i) Fire

The Contractor shall advise the relevant authority of a fire as soon as one starts and shall not wait until he can no longer control it. The Contractor shall ensure that his employees are aware of the procedure to be followed in the event of a fire, including having emergency numbers on all cell phones.

##### ii) Accidental leaks and spillages

The Contractor shall ensure that his employees are aware of the emergency procedure(s) to be followed for dealing with spills and leaks, which shall include notifying the Employer's Agent and the relevant authorities. The Contractor shall ensure that the necessary materials and equipment for dealing with spills and leaks is available on Site at all times. Treatment and remediation of the spill areas shall be undertaken to the reasonable satisfaction of the Employer's Agent.

In the event of a hydrocarbon spill, the source of the spillage shall be isolated, and the spillage contained. The area shall be cordoned off and secured. The Contractor shall ensure that there is always a supply of absorbent material readily available to absorb/ breakdown and where possible be designed to encapsulate minor hydrocarbon spillage. The quantity of such materials shall be able to handle a minimum of 200 l of hydrocarbon liquid spill.

#### PB 6.3.18 Community relations

The Contractor shall erect and maintain information boards in the position, quantity, design and dimensions specified. Such boards shall include contact details for complaints by members of the public in accordance with details provided by the Employer's Agent.

The Contractor shall keep a "Complaints Register" on Site. The Register shall contain all contact details of the person who made the complaint, information regarding the complaint, actions taken and outcome of actions taken.

The Contractor shall ensure that at all times there is an adequate and safe path for pedestrians passing the site, if needed walkways must be constructed.

Should it be required, the Contractor shall appoint an independent, qualified and experienced Community Liaison Officer (CLO) to link with neighbouring I&APs

#### PB 6.3.19 Erosion and sedimentation control

The Contractor shall take all reasonable measures to limit erosion and sedimentation due to the construction activities. Where erosion and/or sedimentation, whether on or off the Site, occurs despite the Contractor complying with the foregoing, rectification shall be carried out in accordance with details specified by the Employer's Agent. Where erosion and/or sedimentation occur due to the fault of the Contractor, rectification shall be carried out to the reasonable requirements of the Employer's Agent.

Any runnels or erosion channels developed during construction or during the defects liability period shall be backfilled and compacted. Stabilisation of cleared areas to prevent and control erosion shall be actively managed. Consideration and provision shall be made for various methods, namely, brushcut packing, mulch or chip cover, straw stabilising (at a rate of one bale/ 20 m<sup>2</sup> and rotovated into the top 100 mm of the completed earthworks), watering, soil binders and anti-erosion compounds, mechanical cover or packing structures (e.g. Hessian cover).

Traffic and movement over stabilised areas shall be restricted and controlled, and damage to stabilised area shall be repaired and maintained to the satisfaction of the Employer's Agent.

#### PB 6.3.20 Aesthetics

The Contractor shall take reasonable measures to ensure that construction activities do not have an unreasonable impact on the aesthetics of the area.

The Contractor in consultation with Employer's Agent shall establish fixed reference points for taking photographs. Photographs shall be taken before commencement of construction, monthly during Construction and continued for one year after practical completion or until close report was submitted as required by NEMA EIA regulations.

The Contractor shall take necessary measures to ensure that landscaped areas are accepted and repaired in consultation with the relevant landowner or a Horticulturist from NMBM.

#### PB 6.3.21 Recreation

If so required by the Specification Data, the Contractor shall take measures to reduce disruption to recreational users of the area abutting the Site.

#### PB 6.3.22 Access to site

The Contractor shall ensure that access to the Site and associated infrastructure and equipment is off-limits to the public at all times during construction. If so required, as directed by the Employer's Agent, the Contractor shall fence the site to ensure effective control of access to the site. This fence shall be a diamond mesh fence or similar with a minimum height of 1.8 m, and it shall be erected around the site and shall be maintained for the duration of construction.

The Contractor shall make sure that pedestrians can pass by the site without exposing themselves to plant or safety risks. If needed, a dedicated travel way should be constructed to allow for safe passage or to cross excavations.

#### PB 6.3.23 Crane operations

Drive plants shall be well maintained and drip trays shall be positioned at potential leak areas. Over-greasing of crane cables shall be avoided.

Movement and lifting of hazardous materials shall be undertaken such that they do not cause a pollution, spillage or safety risk (in particular where concrete buckets are in use).

#### PB 6.3.24 Trenching

Trenching for services shall be undertaken in accordance with the engineering specifications with the following environmental amplifications, where applicable:

- a) Soil shall be excavated and used for refilling trenches i.e. soil from the first trench shall be excavated and stockpiled, thereafter soil from the second excavated trench length shall be used to backfill the trench behind it once the services have been laid. The last trench shall be filled using the soil stockpiled from the first trench.
- b) Trench lengths shall be kept as short as practically possible before backfilling and compacting.
- c) Trenches shall be re-filled to the same level as (or slightly higher to allow for settlement) the surrounding land surface to minimise erosion.
- d) Topsoil should be placed on top and not be compacted to allow for vegetation regrowth.
- e) If needed safe crossings and pedestrian pathways should be allowed if the trenches cannot be closed within reasonable periods.

#### PB 6.3.25 Demolition

All safety requirements need to be adhered to in terms of OHSA.

If blasting is required the Contractor shall advise neighbours 14 days prior to commencement and again one day prior to demolition. Special warning is to be posted to pet owners about blasting schedules.

Hazardous and non-hazardous materials shall be separated at site and disposed of in a manner approved by the Employer's Agent.

All buildings older than 60 years require a permit from South African Heritage Resources Agency in terms of the National Heritage Resources Act (No. 25 of 1999). A demolition permit is also required from the local authority in terms of the National Building Regulations.

The Contractor shall allow for recycling of material and crushing of concrete material should be applied on site as agreed with the Employer's Agent.

#### PB 6.3.26 Drilling and jack hammering

The Contractor shall take all reasonable measures to limit dust generation and noise as a result of drilling operations. The Contractor shall ensure that no pollution results from drilling operations, either as a result of oil and fuel drips, or from drilling fluid.

Any areas or structures damaged by the drilling and associated activities shall be rehabilitated by the Contractor to the satisfaction of the Employer's Agent.

#### PB 6.3.27 Stockpiling

The Contractor in conjunction with the Employer's Agent will identify suitable sites for stockpiling. Stockpiles shall be convex in shape, shall be no higher than 2 m and shall be located so as to cause minimal disturbance. Stockpiles shall be so placed to occupy minimum width compatible with the natural angle of repose of material, and measures shall be taken to prevent the material from being spread over too wide a surface. Where required, appropriate precautions shall be taken to prevent the erosion and limit the compaction of the stockpiles. The Contractor shall ensure that all stockpiles do not cause the damming of water or run off, or is itself washed away.

Topmaterial stockpiles shall not be covered with any material (e.g. plastic) that may kill seeds or cause it to compost. If the stockpiles start to erode significantly or cause dust problems, they shall be covered with hessian. Where practical, Topmaterial shall not be left for longer than six to eight months before being used for rehabilitation. If stored for longer than six months, the Topmaterial shall be analysed and, if necessary, upgraded before placement.

#### PB 6.3.28 Site closure and rehabilitation

Any areas that the Employer's Agent believes may have been impacted upon or disturbed, shall be rehabilitated to the satisfaction of the Employer's Agent, which includes all areas where Topmaterial has been stripped. Once construction is complete the Contractor shall clear everything from the Site not forming part of the Permanent Works. The area to be rehabilitated shall first be landscaped to match the topography of the surrounding area as it was prior to construction. The composition of vegetation to be used for any rehabilitation shall be as specified in the Specification Data.

The Contractor may not use herbicides, pesticides, fertilisers or other poisonous substances for the rehabilitation process unless otherwise agreed with the Employer's Agent.

All rehabilitated areas shall be considered "no go" areas and the Contractor shall ensure that none of his staff or equipment enters these areas.

The Contractor shall undertake to remove all alien vegetation re-establishing on the area and shall implement the necessary temporary or permanent measures to combat soil erosion.

#### PB 6.3.29 Temporary revegetation of the areas disturbed by construction.

Where there is likely to be a delay of greater than two weeks in the landscaping and revegetation of a disturbed area or where that site is likely to be the subject of further construction activities at a later stage, the Contractor shall ensure that the area is temporarily revegetated to combat dust generation and prevent erosion. This revegetation shall occur incrementally immediately upon completion of the construction activities at the subject location.

Prior to revegetation structures and material not forming part of the Permanent Works, including remnants of building materials, concrete foundations, timber and other foreign debris, shall be removed and disposed of via the solid waste management system. The area shall be revegetated as follows:

- a) The surface shall be prepared to mimic natural surrounding landscape by hand or machine as far as practically possible.
- b) Alien vegetation shall be cleared by cutting the plants off at ground level, and painting the stump with 0.5% Garlon in diesel.
- c) Unless otherwise specified the area shall be covered with a layer of topsoil according to the drawing, after the basic ground shaping has been done. The surface of the topsoil shall conform as clearly as possible to the contours indicated in the earthworks plan. The surface shall never vary more than 50mm from the specified heights and no humps or dips of more than 50mm shall be visible when tested with a 3000mm straightedge.
- d) The Contractor shall periodically take soil samples on site at places pointed out by the Employer's Agent for analysis to establish fertility and suitability of the soil and shall be paid for costs necessary to cover this item.
- e) For areas with a slope of greater than 1:3, straw shall be utilised as a binding material to stabilise the soil during revegetation and rehabilitation of the site. Straw shall consist of natural, dried fibres of hay or chaff of various lengths between 50 mm and 400 mm, delivered to Site in bales and shall be applied



evenly by hand or machine at a rate of 1 bale per 20 m<sup>2</sup> over the area to be revegetated. It shall then immediately be rotovated into the upper 100 mm layer of soil.

f) The prepared area shall be hydro- or hand-seeded at a rate of 40 kg/ha using Rye grass (*Cynodon dactylon*). Seed shall be sowed in moist soil in a well prepared seed bed. Seed shall be sown with accepted and approved type of back pack or other type of sower. Where seed is sowed by hand because of the incline of the terrain it shall be mixed with enough lime or fine sand. Seed shall be halved and sowed over the area twice to get an even distribution. On completion of the seeding the surface shall be covered by drawing an inverted harrow or hessian drag over the area. After covering the sowed seed the area shall be rolled with a Cambridge roller.

g) Water used for the irrigation of vegetated areas shall be free of pollutants that will have a detrimental effect on the plants. The vegetated area shall only be watered once, immediately following seeding. Watering should be carried out from a tanker, using a fine nozzle spray to avoid erosion and disturbance of the vegetation. Water for irrigation purposes may not be drawn from any water body.

h) No construction equipment, vehicles or unauthorised personnel shall be allowed onto areas that have been vegetated. Only persons or equipment required for the preparation of areas, application of fertiliser and maintenance of revegetated area shall be allowed to operate on these areas.

#### PB 6.3.30 Temporary site closure

If the site is closed for a period exceeding one week, the Contractor, in consultation with the Employer's Agent shall carry out the following checklist procedure.

#### **Hazardous materials stores**

- a) Outlet secure/ locked
- b) Bund empty (where applicable)
- c) Fire extinguishers serviced and accessible
- d) Secure area from accidental damage e.g. vehicle collision
- e) Emergency and contact details displayed
- f) Adequate ventilation

#### **Safety**

- a) All trenches and manholes secured
- b) Fencing and barriers in place as per the Occupational Health and Safety Act (No 85 of 1193)
- c) Emergency and management contact details displayed
- d) Pipe stockpile wedged/ secured

#### **Erosion**

- a) Wind and dust mitigation in place
- b) Slopes and stockpiles at stable angle
- c) Revegetated areas watering schedules and supply secured

#### **Water contamination and pollution**

- a) Cement and materials stores secured
- b) Toilets empty and secured
- c) Refuse bins empty and secured
- d) Drip trays empty and secure (where possible)
- e) Structures vulnerable to high winds secure

### **PB 7 COMPLIANCE WITH REQUIREMENTS AND PENALTIES**

#### **PB 7.1 COMPLIANCE**

Environmental management is concerned not only with the final results of the Contractor's operations to carry out the Works but also with the control of how those operations are carried out. Tolerance with respect to environmental matters applies not only to the finished product but also to the standard of the day-to-day operations required to complete the Works.



It is thus required that the Contractor shall comply with the environmental requirements on an ongoing basis and any failure on his part to do so will entitle the Employer's Agent to certify the imposition of a penalty as detailed below.

#### **PB 7.2**      Penalties

Penalties will be issued for certain transgressions. Penalties may be issued per incident at the discretion of the Employer's Agent. Such penalties will be issued in addition to any remedial costs incurred as a result of non-compliance with this Specification. The Employer's Agent will inform the Contractor of the contravention and the amount of the penalty, and shall be entitled to deduct the amount from monies due under the Contract.

Fines for the activities detailed below, will be imposed by the Employer's Agent on the Contractor.

a)	Any employees, vehicles, plant, or thing related to the Contractor's operations operating within the designated boundaries of a "no-go" area.	R 10 000
b)	Disposing of contaminated water in Municipal systems	R 10 000
c)	Any vehicle driving in reckless manner.	R 1 000
d)	Persistent and un-repaired oil leaks from machinery.	R 3 000
e)	Persistent failure to monitor and empty drip trays timeously.	R 1 000
f)	The use of inappropriate methods for refuelling.	R 1 000
g)	Litter on site associated with construction activities.	R 1 000
h)	Deliberate lighting of illegal fires on site.	R 5 000
i)	Employees not making use of the site ablution facilities.	R 2 000
j)	Failure to implement specified noise controls, particularly during blasting	R 2 000
k)	Failure to manage waste bins on a regular basis.	R 1 000
l)	Inadequate dust control.	R 1 000
m)	Destruction and /or removal of flora	R 5 000
n)	Trapping and/or killing of fauna	R 5 000
o)	A spillage, pollution, or any damage to any water course resulting from negligence on the part of the Contractor.	R 10 000

For each subsequent similar offence, the fine shall be doubled in value to a maximum value of R 100 000.

The Employer's Agent will determine what constitutes a transgression in terms of this clause, subject to the provisions of Clause 60(1) of the General Conditions of Contract. In the event that transgressions continue the Contractor's attention is drawn to the provisions of Sub-clause 58(1)(b)(vi) of the General Conditions of Contract under which the Employer's Agent may cancel the Contract.

#### **PB 7.3**      Removal from site and suspension of Works

The Employer's Agent may instruct the Contractor to remove from Site any person(s) who in their opinion is guilty of misconduct, or is incompetent, negligent or constitutes an undesirable presence on Site. Sub-clause 7.2.1 of the GCC (2015) requires that all Plant be in good working order, and accordingly the Employer's Agent may order that any Plant not complying with the Specifications be removed from Site. Sub-clause 7.6.4 states that where the Employer's Agent deems the Contractor to be in breach of any of the requirements of Sub-clause 7.6.1 and 7.6.3, he may be entitled to pay other persons to carry out the same and all costs are to be borne by the Contractor

#### **PB 8. VOID**

#### **PB 9. VOID**

#### **PB 10**      **MEASUREMENT AND PAYMENT**

##### **PB 10.1**      **BASIC PRINCIPLES**

##### **PB 10.1.1**      General

Except as specified below, or in the Specification Data or as billed, no separate measurement and payment will be made to cover the costs of complying with the provisions of this Specification and such costs shall be deemed to be covered by the rates tendered for the items in the Schedule of Rates completed by the Contractor when submitting his tender.

PB 10.1.2 All requirements of the environmental management specification

All work not measured elsewhere, associated with complying with any requirement of this Environmental Management specification will be measured and paid as a sum.

The tendered sum shall cover the cost of with complying with the environmental management specification and shall include for all materials, labour and plant required to execute and complete the Works as specified, described in the Schedule of Rates or shown on the Drawing(s).

PB 10.1.3 Work "required by the Specification Data"

Where a clause in this Specification includes a requirement as "required by the Specification Data", measurement and payment for compliance with that requirement shall be in accordance with the relevant measurement and payment clause of the Specification Data.

PB 10.2 BILLED ITEMS

PB 10.2.1 Method Statements: Additional work

Unit: ..... No

No separate measurement and payment will be made for the provision of Method Statements but, where the Employer's Agent requires a change on the basis of his opinion that the proposal may result in, or carries a greater than warranted risk of damage to the environment in excess of that warranted by the Specifications, then any additional work required, provided it could not reasonably have been foreseen by an experienced contractor, shall be valued in accordance with the Clause in the General Conditions of Contract dealing with Provisional Sums.

A stated sum/method statement is provided in the Schedule of Rates to cover payment for such additional work.

PB 10.2.2 All requirements of the environmental management specification

Unit: ..... Sum

All other work not measured elsewhere, associated with complying with any requirement of the environmental management specification shall be measured as a sum.

The tendered rate shall cover any cost associated with complying with the environmental management specification and shall include for all materials, labour and plant required to execute and complete the work as specified, described in the Schedule of Rates or shown on the drawing(s).

<b>MINIMUM REQUIREMENTS</b>
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Line #	Minimum Criteria	Details	Yes/No
1	Only those bidders who are registered with the CIDB with a minimum of <b>6CE CIDB</b> contractor grading designation are required.	A valid CIDB certificate must be attached.	
2	<b>Construction Manager</b>	<p><b><u>1. Experience:</u></b></p> <p>Minimum of three (3) years' experience in sewerage infrastructure maintenance.</p> <p><b><u>2. Qualification:</u></b></p> <p>Possess at least a NQF Level 6 Diploma/ Advanced Certificates in Engineering and Built Environment field.</p> <p>The Construction Manager is the person to whom the Contractor has assigned the responsibility of decision making and supervision on all matters relating to the on-site activities. He shall be committed to the project fulltime, unless otherwise agreed by the parties. Should a substitution be allowed, only a person with the same or higher qualifications and experience will be accepted</p> <p><b>Attach CV and proof of qualification.</b></p>	
3	<b>EME Construction Manager</b>	<p><b><u>1. Experience:</u></b></p> <p>Minimum of three (3) years' experience in projects related to the provision of municipal services.</p> <p><b><u>2. Qualification:</u></b></p> <p>Possess at least a NQF Level 6 Diploma/ Advanced Certificates in Engineering and Built Environment field.</p> <p><b>Attach CV and proof of qualification.</b></p>	
4	<b>Health and Safety Representative</b>	<p><b><u>1. Experience:</u></b></p> <p>Minimum of two (2) years construction related work experience.</p> <p><b><u>2. Qualification:</u></b></p> <p>Possess a valid Health and Safety Certificate certifying in-depth knowledge of the Safety, Health and Environmental requirements, and Occupational Health and Safety Act.</p> <p><b>Attach CV and proof of qualification.</b></p>	

5	1 x Jetting & Vacuum Combination Unit	<p><b>Waste Tank Capacity:</b> 6000l</p> <p><b>Clean water Capacity:</b> 120 bars at 250l/min, sized for 25 minutes of continuous jetting</p> <p><b>Minimum suction rate:</b> 500l/s of free air</p> <p><b>Maximum pure suction depth:</b> Not less than 10m</p> <p><b>Suction depth:</b> Be able to suck sludge and debris up to a half brick size a minimum of 20m</p> <p><b>Hoses:</b> 20m minimum suction hose and 10m discharge hose and 50m jetting hose</p>	
6	2 x CCTV Cameras	<p><b>Type:</b> Camera on tractor.</p> <p><b>Max Ext Dim (incl. tractor):</b> 10.5cm wide, 57cm long and 10cm high with wheels for inspecting a 150mm dia pipe.</p> <p><b>Minimum pipe size for operation:</b> 150mm diameter.</p> <p><b>Camera position to centre of pipe:</b> within 10% Inspection Range: 180m (allowing for 2 manhole lengths).</p> <p><b>Ranges of camera speed:</b> maximum camera speeds as per PA 7.2.4</p>	
7	HDPE Welding Equipment	<p><b>Type of fusion jointing:</b> Butt welding equipment in order to construct a leak proof joint in accordance with SANS 1671 and 10268 specification</p> <p><b>Material Grades:</b> PE 63, PE 80 and PE 100</p> <p><b>Minimum diameter:</b> 100mm</p> <p><b>Heater plates temperatures:</b> 195 degrees celcius to 200 degrees celcius</p> <p><b>The Contractor shall provide Calibration certificate for the welding plant to be used</b></p>	
8	Pipe bursting equipment	<p>The equipment shall be suitable for exerting the necessary forces without damage to the manholes. The bursting head shall create a hole big enough that an annulus of approximately 20mm is created around the new pipe. In wet clayish collapsing soil, the bursting length shall be reduced to suit the</p>	

		<p>equipment's capability and to prevent stoppage. In general, the equipment shall be able to operate in varying soil conditions. The bidder shall include full details of the type of pipe bursting equipment he intends to use, of the number of pipe bursting tools in his possession and of all related equipment, including the age of the equipment.</p>	
	<p><b>WORK SATISFACTORILY CARRIED OUT BY THE BIDDER FOR PRIVATE CLIENTS OR ORGANS OF STATE</b></p>	<p>The experience of the bidder, in <b>sewer infrastructure rehabilitation using pipe bursting trenchless technologies</b> will be evaluated. A detailed company profile shall be submitted as part of the bidders proposal.</p> <p>The bidder is to provide the following:</p> <ul style="list-style-type: none"> <li>• Proof of completion by submission of at least one (1) Completion Certificate for trenchless rehabilitation of <b>150mm up to 250mm diameter existing pipes</b> one or more up size for pipe-bursting of depth up to 6m for a private client or organs of state.</li> <li>• Proof of completion by submission of at least one (1) Completion Certificate for trenchless rehabilitation of <b>250mm up to 400mm diameter existing pipes</b> one or more up size for pipe-bursting of depth up to 6m for a private client or organs of state.</li> </ul> <p><b>Verifiable proof of the above must be provided by the Bidder for work either completed by himself or his proposed sub-contractors or the bidder will be considered to be non-responsive.</b></p>	

**KEY PERSONNEL**

Bidder to insert number of personnel he proposes employing on this contract and shall attach to this page the organogram for the Contract of the personnel he intends using. **Duplication of key personnel will not be accepted. Duplication of key personnel for different duties will declare the Bidder as non-responsive.**

Job Description	Name and Surname	Qualification	Years' Experience (Post qualification)	References for past projects of similar nature(Description)
<p><b>Construction Manager</b> – Minimum of three (3) years' experience in sewerage infrastructure maintenance and possess at least a NQF Level 6 Diploma/ Advanced Certificates in Engineering and Built Environment field. <b>Attach CV and proof of qualification.</b></p>				
<p><b>Health and Safety Representative</b> – Minimum of two (2) years construction related work experience and possess a valid Health and Safety Certificate certifying in-depth knowledge of the Safety, Health and Environmental requirements, and Occupational Health and Safety Act. <b>Attach CV and proof of qualification.</b></p>				
<p><b>EME Construction Manager</b> – Minimum of three (3) years' experience in projects related to the provision of municipal services and possess at least a NQF Level 6 Diploma/ Advanced Certificates in Engineering and Built Environment field. <b>Attach CV and proof of qualification.</b></p>				

<b>SCHEDULE OF PLANT AND EQUIPMENT AVAILABLE FOR THE CONTRACT</b>
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The Bidder shall have the following available to the project:

- 2 CCTV equipment (the units should be pan-rotate cameras)
- 1 Jetting and combination Vacuum unit
- HDPE Welding equipment and qualified welders.
- Pipe bursting equipment suitable to burst large diameter (150mm to 400mm) sewer pipes.

The bidder must specify what plant and equipment will be available for the works. Furthermore, the bidder must specify which equipment is owned by the bidder and which is hired. **NB: Proof of ownership for the Plant and Equipment specified and/or Letters of intent from hiring companies shall be submitted.** All equipment must be in full working condition and available to inspection for the evaluation of the quotation submission, if deemed necessary. Equipment lists from Subcontractors to be provided.

The proposed plant and equipment for this Contract should meet the following minimum specifications:

- Jetting and Vacuum combination unit used on this contract shall have the following minimum specifications:

Waste Tank Capacity:	6000 l
Clean water Capacity:	120 bars at 250 l/min, sized for 25 minutes of continuous jetting
Minimum suction rate:	500 l/s of free air
Maximum pure suction depth:	Not less than 10m
Suction depth:	Be able to suck sludge and debris up to a half brick size a minimum of 20m
Hoses:	20m minimum suction hose and 10m discharge hose and 50m jetting hose

The tank must be able to tip at an angle great enough for grit to be discharged. The vehicle needs to comply with the NMBM Waste Management By-Laws (2010) and the National Road Traffic Act (1996).

- CCTV equipment – Pan-rotate camera

Type	: Camera on tractor
Max Ext Dim (incl. tractor)	: 10.5cm wide, 57cm long and 10cm high with wheels for inspecting a 150mm dia pipe
Minimum pipe size for operation	: 150mm diameter
Camera position to centre of pipe:	within 10%
Inspection Range	: 180m (allowing for 2 manhole lengths)
Ranges of camera speed	: maximum camera speeds as per PA 7.2.4

- HDPE Welding equipment

Type of fusion jointing	: Butt welding equipment in order construct a leak proof joint in accordance with SANS 1671 and 10268 specification
Material Grades	: PE 63, PE 80 and PE100
Minimum diameter	: 100mm
Heater plates temperatures	: 195°C to 200°C
The Contractor shall provide Calibration certificate for the welding plant to be used.	

- Pipe bursting equipment

It would be advantageous for the bidder to have at least four (4) pipe bursting crews plus machinery for this project.

The equipment shall be suitable for exerting the necessary forces without damage to the manholes. The bursting head shall create a hole big enough that an annulus of approximately 20mm is created around the new pipe. In wet clayish collapsing soil, the bursting length shall be



reduced to suit the equipment's capability and to prevent stoppage. In general, the equipment shall be able to operate in varying soil conditions. The bidder shall include full details of the type of pipe bursting equipment he intends to use, of the number of pipe bursting tools in his possession and of all related equipment, including the age of the equipment.

Details of the proposed plant and equipment to be allocated for the works are as follows:

**1. Jetting and vacuum Combination Unit 1**

Availability Yes  No

Ownership Yes  No

Make and model .....

Age (years) ..... Years with company:..... Kilometres (km).....

Condition  (excellent)  (good)  (fair)

Minimum waste tank capacity: .....ℓ

Minimum clean water tank capacity: .....ℓ

Jetting pressure: .....bar

Minimum flow rate of jetting: .....ℓ/s

Length of jetting hose: .....m

Minimum suction rate: .....ℓ/s of free air

Suction depth (normal): .....m

Maximum pure suction depth (air lift): .....m

Length of suction pipe: .....m

Length of discharge pipe: .....m

Maximum solid size: .....mm

Details of decanting system: .....

Angle that tanker can tip at: .....°

Class of vehicle on NATIS system: .....

Comply with the NMBM Waste Management By-Laws (2010) and the National Road Traffic Act (1996)  Yes  No

GPS Tracking  Yes  No

**2. CCTV Unit 1: Pan-rotate camera:**

Availability Yes  No

Ownership Yes  No

Make and model .....

Age (years) ..... Years with company:..... Kilometres (km).....

Condition  (excellent)  (good)  (fair)

Dimensions: .....

Inspection range: .....m

Minimum pipe size operation:.....mm

Maximum pipe size operation:.....mm

Ranges of camera speed:.....m/s to .....m/s

3. **CCTV Unit 2: Pan-rotate camera:**

Availability Yes  No   
 Ownership Yes  No

Make and model .....

Age (years) ..... Years with company:..... Kilometres (km).....

Condition  (excellent)  (good)  (fair)

Dimensions: .....

Inspection range: .....m

Minimum pipe size operation:.....mm

Maximum pipe size operation:.....mm

Ranges of camera speed:.....m/s to .....m/s

4. **HDPE Welding Equipment: Butt fusion:**

Availability Yes  No   
 Ownership Yes  No

Make and model .....

Age (years) ..... Years with company:.....

Condition  (excellent)  (good)  (fair)

Diameter range: .....mm to .....mm

Size of clamp shells	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
Trimmer	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
Heater plate	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
Hydraulic pump	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
Timer	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
Pipe support rollers	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
External/Internal debanding tool	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
Bead guage	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
Digital thermometer with surface probe	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>

5. **Pipe Bursting Equipment:**

Type	Pneumatic	<input type="checkbox"/>	Static	<input type="checkbox"/>	Hydraulic	<input type="checkbox"/>			
Availability	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	
Ownership	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	
No. off	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>				
Make and model	<input type="text"/>		<input type="text"/>		<input type="text"/>				
Age (years)	<input type="text"/>		<input type="text"/>		<input type="text"/>				
Years with company:	<input type="text"/>		<input type="text"/>		<input type="text"/>				
Condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	(excel)	(good)	(fair)	(excel)	(good)	(fair)	(excel)	(good)	(fair)

Pulling equipment .....Pulling capacity .....Load gauges and controls.....

Bursting head sizes.....Rotating eyes.....

**SCHEDULE OF WORK SATISFACTORILY CARRIED OUT BY THE BIDDER FOR PRIVATE CLIENTS  
OR ORGANS OF STATE**

*(Organs of State include any Local, Provincial or National Government Authority)*

The experience of the bidder, in **sewer infrastructure rehabilitation using pipe bursting trenchless technologies** will be evaluated. A detailed company profile shall be submitted as part of the bidders proposal.

The bidder is to provide the following:

- Proof of completion on by submission of at least one (1) Completion Certificate for trenchless rehabilitation of **110mm up to 160mm diameter existing pipes** one or more up size for pipe-bursting of depth up to 6m for a private client or organs of state.
- Proof of completion by submission of at least one (1) Completion Certificate for trenchless rehabilitation of **160mm up to 250mm diameter existing pipes** one or more up size for pipe-bursting of depth up to 6m for a private client or organs of state.
- Proof of completion by submission of at least one (1) Completion Certificate for trenchless rehabilitation of **250mm up to 400mm diameter existing pipes** one or more up size for pipe-bursting of depth up to 6m for a private client or organs of state.

**Verifiable proof of the above must be provided by the Bidder for work either completed by himself or his proposed sub-contractors or the bidder will be considered to be non-responsive.**

## C2.1 : PRICING INSTRUCTIONS

### C2.1.1 PREAMBLE TO THE SCHEDULE OF RATES

- C2.1.1.1 The Conditions of Contract, the Contract Data, the Scope of Work, the Site Information and the Drawings shall be read in conjunction with the Schedule of Rates.
- C2.1.1.2 Measurement and payment shall be in accordance with the relevant provisions of clause 8 of each of the SABS 1200 Standardized Specifications for Civil Engineering Construction or the Particular Specifications referred to in the Scope of Work, subject to the variations and amendments contained therein.
- C2.1.1.3 The Schedule of Rates comprises items covering the Contractor's profit and costs of general liabilities and of the construction of Temporary and Permanent Works.

Although the Bidder is at liberty to insert a rate of his own choosing for each item in the Schedule of Rates, he should note the fact that the Contractor is entitled, under various circumstances, to payment for additional work carried out and that the Employer's Agent is obliged to base his assessment of the rates to be paid for such additional work on the rates the Contractor inserted in the Schedule of Rates.

Clause 8 of each Standardized Specification, and the measurement and payment clause of each Particular Specification, read together with the relevant clauses of the Scope of Work, all set out which ancillary or associated activities are included in the rates for the specified operations.

- C2.1.1.4 Descriptions in the Schedule of Rates are abbreviated and comply generally but may differ from those in the Standardized Specifications and Scope of Work. No consideration will be given to any claim by the Contractor submitted on such a basis. The Schedule of Rates has been drawn up generally in accordance with the latest issue of Civil Engineering Quantities<sup>2</sup>. Should any requirement of the measurement and payment clause of the appropriate Standardized or Particular Specifications be contrary to the terms of the Schedule of Rates or, when relevant, to the Civil Engineering Quantities, the requirement of the appropriate Standardized or Particular Specification, as the case may be, shall prevail.

A payment reference column is provided in the BOQ to assist the Bidder when pricing this tender. Certain items may not have a payment reference and the onus is on the bidder to refer to the relevant specifications as stated above to ensure that the item is priced correctly. If in doubt the bidder shall preferably seek clarification or else qualify any assumptions made.

<sup>2</sup> The standard system of measurement of civil engineering quantities published by the South African Institution of Civil Engineers.

C2.1.1.5 Unless stated to the contrary, items are measured net in accordance with the Drawings without any allowance having been made for waste.

C2.1.1.6 The amounts and rates to be inserted in the Schedule of Rates shall be the full inclusive amounts to the Employer for the work described under the several items. Such amounts shall cover all the costs and expenses that may be required in and for the construction of the work described, and shall cover the costs of all general risks, profits, taxes (but excluding Value Added Tax), liabilities and obligations set forth or implied in the documents on which the tender is based.

C2.1.1.7 An amount or rate shall be entered against each item in the Schedule of Rates, whether or not quantities are stated. ALL items in the Schedule of Rates should be allocated rates. If the Bidder fails to allocate a rate(s) on an item(s) in the Schedule of Rates, he shall be considered non-responsive.

The Bidder shall also fill in a rate against the items where the words "rate only" appears in the amount column. Although no work is foreseen under these items and no quantities are consequently given in the quantity column, the tendered rates shall apply should work under these items actually be required.

No grouping of items in the Schedule of Rates are allowed. Each item should be bidder on individually.

The tendered rates, prices and sums shall, subject only to the provisions of the Conditions of Contract, remain valid irrespective of any change in the quantities during the execution of the Contract.

C2.1.1.8 The quantities of work, for each particular works order, as measured and accepted and certified for payment in accordance with the Conditions of Contract, will be used to determine payments to the Contractor. The validity of the Contract shall in no way be affected by differences between the quantities in the particular works order and the quantities certified for payment.

The quantities set out for each particular works order are the estimated quantities of the Contract Works, but the Contractor will be required to undertake the quantities as may be directed by the Employer's Agent from time to time. The Contract Price for the completed contract shall be computed from the actual quantities of work done, valued at the relevant unit rates and prices.

**Ordering of materials** is not to be based on the Schedule of Rates, but only on information issued for construction purposes.

C2.1.1.9 For the purposes of this Schedule of Rates, the following words shall have the meanings hereby assigned to them:

Unit: The unit of measurement for each item of work as defined in the Standardized or Particular Specifications

Quantity: The number of units of work for each item. Fictitious quantities are inserted for tender stage and adjudication (Exact quantities to be provided with each **Particular Works Order**). The Contractor will be required to undertake whatever quantities as may be directed by the Employer's Agent from time to time.

Rate: The payment per unit of work at which the Bidder tenders to do the work

Amount: The quantity of an item multiplied by the tendered rate of the (same) item

Sum: An amount tendered for an item, the extent of which is described in the Schedule of Rates, the Specifications or elsewhere, but of which the quantity of work is not measured in units

C2.1.1.10 The units of measurement indicated in the Schedule of Rates are metric units. The following abbreviations may appear in the Schedule of Rates:

mm	=	millimetre	h	=	hour
m	=	metre	kg	=	kilogram
km	=	kilometre	t	=	ton (1 000 kg)
m <sup>2</sup>	=	square metre	No	=	number
m <sup>2</sup> .pass	=	square metre-pass	sum	=	lump sum
ha	=	hectare	MN	=	Meganewton
m <sup>3</sup>	=	cubic metre	MN.m	=	Meganewton-metre
m <sup>3</sup> .km	=	cubic metre-kilometre	PC sum	=	Prime Cost sum
ℓ	=	litre	Prov sum	=	Provisional sum
kℓ	=	kilolitre	%	=	per cent
MPa	=	MegaPascal	kW	=	kilowatt
Mℓ	=	Megalitre (1000 kℓ)	kN	=	kilonewton

C2.1.1.11 Rates shall include for the transportation of labour to and from site, including labour from the local ward used by the main/principal contractor and his/her subcontractors and the labour used by the Emerging Micro Enterprises.

## CORRECTION OF ENTRIES MADE BY BIDDER

*Any entry made by the Bidder in the Price Schedule, forms, etc., which the bidder desires to change, shall not be erased or painted out. A line shall be drawn through the incorrect entry and the correct entry shall be written above in black ink and the full signature of the Bidder shall be placed next to the correction.*

## NOTE

Bidders are to refer to the Scope of Works when pricing the Schedule of Rates. Certain clauses in the Standard Specifications and the Particular Specifications have been omitted, amended or added to and these changes must be considered when pricing the tender.

As it is not always practical or possible to cross reference every change to the Specifications, the onus rests on the bidder to ensure that he is aware of the changes and to structure his rates accordingly.

**C2.2: SCHEDULE OF RATES**



## SECTION 1: PRELIMINARY AND GENERAL

Item	Payment Refers	Description	Unit	Quantity	Rate	Amount
1		<b>SECTION 1: PRELIMINARY AND GENERAL</b>				
	SABS 1200 A	<b>GENERAL</b> as specified in SABS 1200 A and in the Scope of Work				
1.1	8.3 PSA 8.3	<b>SCHEDULED FIXED-CHARGE AND VALUE RELATED ITEMS:</b>  <b>Assignment Value Categories:</b>				
1.1.1		(i) From R 0 to R2 000 000	%	-		Rate Only
1.1.2		(ii) Over R2 000 000 to R5 000 000	%	-		Rate Only
1.1.3		(iii) Over R5 000 000 to R10 000 000	%	-		Rate Only
1.1.4		(iv) Over R10 000 000	%	-		Rate Only
1.2	8.4	<b>SCHEDULED TIME RELATED ITEMS : (Refer PSA 8.1.2.1 and PSA 8.2.2)</b>				
	PSA 8.4.6	<b>Compensation in terms of Clauses 5.12.2.4 and 9 of the Conditions of Contract for delays incurred:</b>				
1.2.1		(a) Plant	Sum/day	30		
1.2.2		(b) Labour	Sum/day	30		
1.2.3		(c) Supervision	Sum/day	30		
1.2.4		(d) Other services, facilities etc not covered by 1.2.1 through to 1.2.3	Sum/day	30		
1.3	8.5 PSA 8.5	<b>SUMS STATED PROVISIONALLY BY THE ENGINEER:</b>				
1.3.1	PSA 8.5.2(a)	Subcontracting portion of works (Work Packages) reserved for EMEs (Refer also PSA 5.16)	Prov Sum	-	-	R 650,000.00
1.3.2	PSA 8.5.2(b)	Overheads, charges and profit on 1.3.1	%	650000		
1.3.3	PSA 8.5.3(a)	Provision of Security Supervision: On-site Security Supervision to ensure a safe working environment for all workers, materials, and works on-site during working hours.	Prov Sum	-	-	R 1,800,00.00
1.3.4	PSA 8.5.3(b)	Overheads, charges and profit on 1.3.3 above	%	1800000		
1.4	PSA 8.6	<b>PRIME COST SUMS:</b>				
1.4.1	PSA 8.6.1 (a)	Allow ance for acceptance control testing by Engineer (not for process control testing to be carried out by the Contractor)	PC Sum	-	-	R 10,000
1.4.2	PSA 8.6.1 (b)	Charges Required by the Contractor on 1.4.1 above	%	10000		
1.4.3	PSA 8.6.1 (a)	Allow ance for payment of Social Facilitator	PC Sum	-	-	R 50,000
1.4.4	PSA 8.6.1 (b)	Charges Required by the Contractor on 1.4.3 above	%	50 000		
1.4.5	PSA 8.6.1 (a)	Allow ance for payment of Community Liaison Officer	PC Sum	-	-	R 150,000
1.4.6	PSA 8.6.1 (b)	Charges Required by the Contractor on 1.4.5 above	%	150000		
1.4.7	PSA 8.6.1 (a)	Allow ance for Training for EME Subcontractor	PC Sum	-	-	R 150,000
1.4.8	PSA 8.6.1 (b)	Charges Required by the Contractor on 1.4.7 above	%	150000		
1.4.9	PSA 8.6.1 (a)	Payment to Employer's Agent for electronic equipment purchases	PC Sum	-	-	R 50,000
1.4.10	PSA 8.6.1 (b)	Overheads, charges and profit on 1.4.9	%	50000		
1.4.11	PSA 8.6.1 (a)	Allow ance for other trenchless technologies	PC Sum	-	-	R 1,500,000
1.4.12	PSA 8.6.1 (b)	Overheads, charges and profit on 1.4.11	%	1500000		
<b>TOTAL CARRIED FORWARD</b>						

SECTION 1: PRELIMINARY AND GENERAL						
Item	Payment Refers	Description	Unit	Quantity	Rate	Amount
<b>BROUGHT FORWARD</b>						
1.5	8.7 PSA 8.7	<b>DAYWORK (Provisional):</b>				
		<b>(a) Labour: (rates shall include for on costs)</b>				
1.5.1		(i) Unskilled	hour	100		
1.5.2		(ii) Semi-skilled	hour	75		
1.5.3		(iii) Ganger	hour	50		
1.5.4		(iv) Artisan	hour	25		
		<b>(b) Materials:</b>				
1.5.5		(i) Allow provisional sum for materials based on their nett cost	Prov Sum	-	-	R 50,000
1.5.6		(ii) Percentage adjustment to item 1.5.5 for materials	%	50000		
		<b>(c) Plant: (Rates shall include for on costs)</b>				
1.5.7		(i) Rubber tyred front-end loader minimum 90 kW (Caterpillar 908 or equivalent) State make ..... and model .....	hour	70		
1.5.8		(ii) Backhoe Loader minimum 60 kW (Caterpillar 416D or equivalent) State make ..... and model .....	hour	70		
1.5.9		(iii) Water Tanker Truck minimum 15 m³ capacity State make ..... and model .....	hour	70		
1.5.10		(iv) Compressor complete with hand tools and attachments - minimum 250 cfm State make ..... and model .....	hour	70		
1.5.11		(v) Tip Truck - minimum truck capacity of 5m³ State make ..... and model .....	hour	70		
1.5.12		(vi) LDV with rodding equipment and team State make ..... and model .....	hour	70		
1.5.13		(vii) Centrifugal pump, 150mm dia, with hoses (20 to 25 l/s) State make ..... and model .....	hour	70		
1.5.14		(viii) Sludge pump, 100mm dia, with hoses (10 to 15 l/s) State make ..... and model .....	hour	70		
1.5.15		(ix) Combination unit and team State make ..... and model .....	hour	50		
1.5.16		(x) Vacuum Tanker and team State make ..... and model .....	hour	20		
1.5.17		(xi) CCTV Closed-circuit make ..... and model ..... State	hour	100		
1.5.18		(xii) Truck mounted hydraulic crane (20 tons) State make ..... and model .....	hour	50		
<b>TOTAL CARRIED FORWARD</b>						

SECTION 1: PRELIMINARY AND GENERAL						
Item	Payment Refers	Description	Unit	Quantity	Rate	Amount
<b>BROUGHT FORWARD</b>						
1.6	8.8	<b>TEMPORARY WORKS:</b>				
	8.8.4 PSA 8.8.4 (c)	<b>Existing services:</b>				
1.6.1		(a) Excavate by hand in soft material to expose existing services	m <sup>3</sup>	200		
	PSA 8.8.7	<b>Compliance with the occupational health and safety act (act 85 of 1993) and all relevant and applicable regulations, especially the construction regulations, 2014 as promulgated on 7 February 2014 under section 43 of the occupational health and safety act (act 85 of 1993), as amended from time to time, for the duration of</b>				
1.6.2		(a) Contractor	Month	12		
1.6.3		(b) Subcontractors (own)	Month	12		
1.6.4		(c) Subcontractors (EME)	Month	12		
1.7	PSA 8.9	Re-establishment	No	2		
1.8	PSA 8.10	Emergency re-location	No	2		
1.9	PSA 8.11	<b>MARK-UP FOR AFTER HOURS CALLOUT</b>				
1.9.1		Mark-up on Daywork rates for call-out after hours	%	-		
1.10	PSA 8.12	<b>Allowance for EME Construction Manager</b>	Month	12		
1.11	PB	<b>ENVIRONMENTAL MANAGEMENT as specified in Particular Specification PB</b>				
1.11.1	PB 10.2.1	Method Statements: Additional work	No	50		
1.11.2	PB 10.2.2	All requirements of the environmental management specification (All work not measured elsewhere, associated with complying with any requirements of the environmental management)	Month	12		
1.12	ANNEXURE B	<b>HIV AND AIDS SPECIFICATION as specified in ANNEXURE B</b>				
1.12.1		<b>AWARENESS CHAMPION</b> Selection, appointment, briefing and making available of an Awareness Champion including provision of all relevant services, all in accordance with the HIV/AIDS Specification	Month	12		
1.12.2		<b>AWARENESS WORKSHOPS</b> Selection and appointment of a competent Service Provider approved by the Representative/Agent, provision of a Service Provider Workshop Plan and a suitable venue, conducting of awareness workshops by means of traditional and/or modern multi-media techniques, including follow-up courses, making available all tuition material and performing assessment procedures, all in accordance with the HIV/AIDS	Month	12		
<b>TOTAL CARRIED FORWARD</b>						

SECTION 1: PRELIMINARY AND GENERAL						
Item	Payment Refers	Description	Unit	Quantity	Rate	Amount
<b>BROUGHT FORWARD</b>						
1.12.3		<b>POSTERS, BOOKLETS, VIDEOS, ETC.</b> Provision, displaying, maintaining and replacing when necessary of four plastic laminated posters, booklets and educational videos, etc. for the duration of the construction period, all in accordance with the HIV/AIDS Specification	Month	12		
1.12.4		<b>ACCESS TO CONDOMS</b> Provision and maintenance of condom dispensers fixed in position, including male and female condoms, replenishing male and female condoms on a daily basis as required for the duration of the construction period, all in accordance with the HIV/AIDS Specification	Month	12		
1.12.5		<b>MONITORING</b> Monitoring HIV/AIDS awareness of workers, providing the Representative/Agent with access to information including making available all reports, thoroughly completed and reflecting the correct information, for the duration of the construction period and close out, all in accordance with the HIV/AIDS	Month	12		
<b>TOTAL CARRIED FORWARD TO SUMMARY</b>						

## SECTION 2: SITE CLEARANCE

Item	Payment Refers	Description	Unit	Quantity	Rate	Amount
2		<b>SECTION 2: SITE CLEARANCE</b>				
2.1	SABS 1200C	<b>SITE CLEARANCE: as specified in SABS 1200 C and in the Scope of Work</b>				
	8.2.1 PSC 8.2.1	<b>(a) Clear and grub:</b>				
2.1.1		(i) Clear and grub 6m max width including small trees and stumps < 1m girth	m	70		
2.1.2		(ii) In road reserves	ha	10		
	8.2.2	<b>(b) Remove and grub large trees and tree stumps of</b>				
2.1.3		(i) Over 1m and up to and including 2m	No	10		
2.1.4		(ii) Over 2m and up to and including 3m	No	10		
2.1.5		(iii) Over 3m	No	10		
	8.2.5 PSC 8.2.5	(c) Take down and re-erect existing fences where ordered	km	2		
2.1.7	PSC 8.2.10	(d) Remove and dispose of existing kerbing and concrete channelling	m	70		
2.1.8	PSC 8.2.11	(e) Saw-cut asphalt surfacing	m	70		
2.1.9	PSC 8.2.12	(f) Remove and dispose of asphalt surfacing	m <sup>2</sup>	70		
	PSC 8.2.13	<b>(g) Remove and dispose of existing sewer pipes of diameters indicated:</b>				
2.1.10		- Up to 110mm	m	70		
2.1.11		- 110mm up to 160mm	m	70		
2.1.12		- 160mm up to 600mm	m	70		
2.1.13		- > 600mm	m	70		
	PSC 8.2.14	<b>(h) Re-instate fences using new materials</b>				
2.1.14		(i) Diamond mesh fences >0m to 1,0m high	m	70		
2.1.15		(ii) Diamond mesh fences >1,0m to 2,0m high	m	70		
2.1.16		(iii) Precast walls >0m to 1,0m high	m	70		
2.1.17		(iv) Precast walls >1,0m to 2,0m high	m	70		
2.1.18		(v) 110mm brick walls, including plastering wall both sides >0m to 1,0m high	m	70		
2.1.19		(vi) 110mm brick walls, including plastering wall both sides >1,0m to 2,0m high	m	70		
2.1.20		(vii) 110mm facebrick walls >0m to 1,0m high	m	70		
2.1.21		(viii) 110mm facebrick walls >1,0m to 2,0m high	m	70		
<b>TOTAL CARRIED FORWARD</b>						

SECTION 2: SITE CLEARANCE						
Item	Payment Refers	Description	Unit	Quantity	Rate	Amount
<b>BROUGHT FORWARD</b>						
	PSC 8.2.15	<b>(i) Bypass pumping:</b> Provide and install all temporary plant, equipment, pipework (100m maximum length) and labour required to effect the following bypass pumping between manholes :				
2.1.22		(i) Up to 160mm	Day	60		
2.1.23		(ii) greater than 160mm up to 300mm	Day	50		
2.1.24		(iii) greater than 300mm up to 450mm	Day	40		
2.1.25		(iv) greater than 450mm up to 600mm	Day	30		
2.1.26		(v) greater than 600 mm	Day	20		
2.1.27	PSC 8.2.16	<b>Relocate above plant, equipment and pipework to new site</b>	No	50		
	PSC 8.2.17	<b>(j) Cleaning of Sewers</b> Provide all plant, equipment, tools, materials and labour and clean the following nominal size existing sewers to a standard suitable for the installation of a new liner :				
2.1.28		- 150mm diameter	m	70		
2.1.29		- 200mm diameter	m	70		
2.1.30		- 225mm diameter	m	70		
2.1.31		- 250mm diameter	m	70		
2.1.32		- 300mm diameter	m	70		
2.1.33		- 350mm diameter	m	70		
2.1.34		- 400mm diameter	m	70		
2.1.35		- 450mm diameter	m	70		
2.1.36		- 600mm diameter	m	70		
2.1.37		- 750mm diameter	m	70		
2.1.38		- 900mm diameter	m	70		
2.1.39		- 1050mm diameter	m	70		
2.1.40		Break out benching in existing manholes	No	10		
2.1.41	PSC 8.2.18	<b>Remove topsoil to nominal depth of 150mm, stockpile and maintain</b>	m <sup>3</sup>	10		
	SABS 1200 A	<b>GENERAL as specified in SABS 1200 A and in the Scope of Work</b>				
<b>2.2</b>	PSA 8.6	<b>PRIME COST SUMS:</b>				
2.2.1	PSA 8.6.1 (a)	Allowance for disposal charges at Official Municipal Dumping Sites	PC Sum	-	-	R 100,000
2.2.2	PSA 8.6.1 (b)	Charges Required by the Contractor on 2.2.1 above	%	100000		
<b>TOTAL CARRIED FORWARD TO SUMMARY</b>						

SECTION 3: SEWERS						
Item	Payment Refers	Description	Unit	Quantity	Rate	Amount
<b>3</b>		<b>SECTION 3: SEWERS</b>				
<b>3.1</b>	SABS 1200D	<b>EARTHWORKS: as specified in SABS 1200 D and in the Scope of Works</b>				
	8.3.3 PSD 8.3.3	<b>Restricted excavation:</b>				
	8.3.3 (a) PSD 8.3.3 (a)	<b>(a) Restricted excavation in all materials backfill, compact and dispose of surplus material for launching and receiving pits to the following depths:</b>				
3.1.1		- Depth up to 1.0m	m <sup>3</sup>	10		
3.1.2		- Depth exceeding 1.0m up to 1.5m	m <sup>3</sup>	10		
3.1.3		- Depth exceeding 1.5m up to 2.0m	m <sup>3</sup>	10		
3.1.4		- Depth exceeding 2.0m up to 2.5m	m <sup>3</sup>	10		
3.1.5		- Depth exceeding 2.5m up to 3.0m	m <sup>3</sup>	10		
3.1.6		- Depth exceeding 3.0m up to 3.5m	m <sup>3</sup>	10		
3.1.7		- Depth exceeding 3.5m up to 4.0m	m <sup>3</sup>	10		
3.1.8		- Depth exceeding 4.0m up to 4.5m	m <sup>3</sup>	10		
3.1.9		- Depth exceeding 4.5m up to 5.0m	m <sup>3</sup>	10		
3.1.10		- Depth exceeding 5.0m	m <sup>3</sup>	10		
3.1.11	8.3.3 (b)	Extra over items 3.1.1 through to 3.1.10 for hard rock excavation	m <sup>3</sup>	70		
	8.3.11	<b>Grassing or other vegetation cover:</b>				
3.1.12	PSD 8.3.11.1	Planting of grass sods	m <sup>2</sup>	10		
3.1.13	PSD 8.3.11.2	Hydroseeding	m <sup>2</sup>	10		
<b>3.2</b>	SABS 1200DB	<b>EARTHWORKS (PIPE TRENCHES): as specified in SABS 1200 DB and in the Scope of</b>				
	8.3.2	<b>Excavation:</b>				
	8.3.2a PSDB 8.3.2 a	<b>(a) Excavate in all materials for trenches, backfill, compact and dispose of surplus material for sewer lateral and/or erf connections and/or point repairs, for the following depths:</b>				
		<b>(i) 100mm up to 200mm diameter erf connections:</b>				
3.2.1		- Depth up to 1.0m	m <sup>3</sup>	10		
3.2.2		- Depth exceeding 1.0m up to 1.5m	m <sup>3</sup>	10		
3.2.3		- Depth exceeding 1.5m up to 2.0m	m <sup>3</sup>	10		
3.2.4		- Depth exceeding 2.0m up to 2.5m	m <sup>3</sup>	10		
3.2.5		- Depth exceeding 2.5m up to 3.0m	m <sup>3</sup>	10		
3.2.6		- Depth exceeding 3.0m up to 3.5m	m <sup>3</sup>	10		
3.2.7		- Depth exceeding 3.5m up to 4.0m	m <sup>3</sup>	10		
3.2.8		- Depth exceeding 4.0m up to 4.5m	m <sup>3</sup>	10		
3.2.9		- Depth exceeding 4.5m up to 5.0m	m <sup>3</sup>	10		
3.2.10		- Depth exceeding 5.0m	m <sup>3</sup>	10		
<b>TOTAL CARRIED FORWARD</b>						



SECTION 3: SEWERS						
Item	Payment Refers	Description	Unit	Quantity	Rate	Amount
<b>BROUGHT FORWARD</b>						
		<b>(ii) 201mm up to 315mm diameter erf connections:</b>				
3.2.11		- Depth up to 1.0m	m <sup>3</sup>	10		
3.2.12		- Depth exceeding 1.0m up to 1.5m	m <sup>3</sup>	10		
3.2.13		- Depth exceeding 1.5m up to 2.0m	m <sup>3</sup>	10		
3.2.14		- Depth exceeding 2.0m up to 2.5m	m <sup>3</sup>	10		
3.2.15		- Depth exceeding 2.5m up to 3.0m	m <sup>3</sup>	10		
3.2.16		- Depth exceeding 3.0m up to 3.5m	m <sup>3</sup>	10		
3.2.17		- Depth exceeding 3.5m up to 4.0m	m <sup>3</sup>	10		
3.2.18		- Depth exceeding 4.0m up to 4.5m	m <sup>3</sup>	10		
3.2.19		- Depth exceeding 4.5m up to 5.0m	m <sup>3</sup>	10		
3.2.20		- Depth exceeding 5.0m	m <sup>3</sup>	10		
		<b>(iii) Sewer Point repairs:</b>				
3.2.21		- Depth up to 1.0m	m <sup>3</sup>	10		
3.2.22		- Depth exceeding 1.0m up to 1.5m	m <sup>3</sup>	10		
3.2.23		- Depth exceeding 1.5m up to 2.0m	m <sup>3</sup>	10		
3.2.24		- Depth exceeding 2.0m up to 2.5m	m <sup>3</sup>	10		
3.2.25		- Depth exceeding 2.5m up to 3.0m	m <sup>3</sup>	10		
3.2.26		- Depth exceeding 3.0m up to 3.5m	m <sup>3</sup>	10		
3.2.27		- Depth exceeding 3.5m up to 4.0m	m <sup>3</sup>	10		
3.2.28		- Depth exceeding 4.0m up to 4.5m	m <sup>3</sup>	10		
3.2.29		- Depth exceeding 4.5m up to 5.0m	m <sup>3</sup>	10		
3.2.30	8.3.2b2 PSDB 8.3.2 b2	(b) Extra over items 3.2.1 through to 3.2.29 for hard rock excavation	m <sup>3</sup>	10		
3.2.31	PSDB 8.3.2 b3	(c) Extra over items 3.1.1 through to 3.1.11 and 3.2.1 through to 3.2.29 for hand excavation w here ordered	m <sup>3</sup>	10		
3.2.32	PSDB 8.3.2 b4	(d) Extra over items 3.2.1 through to 3.2.29 for hand backfilling machine excavated trenches w here ordered	m <sup>3</sup>	10		
3.2.33	PSDB 8.3.2 b5	(e) Extra over items 3.2.1 through to 3.2.29 for selective stockpiling of topsoil w here ordered	m <sup>3</sup>	10		
3.2.34	PSDB 8.3.2 b6	(f) Extra over items 3.2.1 through to 3.2.29 for disposing of spoil material on a site provided by the Contractor	m <sup>3</sup>	10		
3.2.35	PSDB 8.3.2 b7	(g) Extra over items 3.2.1 through to 3.2.29 for backfill stabilised w ith 5% cement w here directed by the Engineer	m <sup>3</sup>	10		
3.2.36	PSDB 8.3.2 b8	(h) Extra over items 3.2.1 through to 3.2.29 for soilcrete backfill w here directed by the Engineer	m <sup>3</sup>	10		
3.2.37	8.3.2c	(i) Excavate and dispose of unsuitable material from trench bottom	m <sup>3</sup>	10		
<b>TOTAL CARRIED FORWARD</b>						

SECTION 3: SEWERS						
Item	Payment Refers	Description	Unit	Quantity	Rate	Amount
<b>BROUGHT FORWARD</b>						
	8.3.3	<b>Excavation ancillaries:</b>				
	8.3.3.1	<b>Make up deficiency in backfill material:</b>				
3.2.38		(a) From other necessary excavations on site	m <sup>3</sup>	10		
		<b>(b) By importation from commercial or off-site sources selected by the Contractor</b>				
3.2.39		(i) Selected material complying with subclause 3.5 of SABS 1200 DB and PSDB 3.5	m <sup>3</sup>	10		
3.2.40	8.3.3.3 PSDB 8.3.3.3	Compaction in road reserves (98% of modified AASHTO maximum density)	m <sup>3</sup>	10		
	8.3.4	<b>Particular items:</b>				
	8.3.4 (a)	<b>(a) Shore trench opposite structure or service, where necessary irrespective of trench width for depths indicated:</b>				
3.2.41		- Depth up to 1.0m	m	70		
3.2.42		- Depth exceeding 1.0m up to 1.5m	m	70		
3.2.43		- Depth exceeding 1.5m up to 2.0m	m	70		
3.2.44		- Depth exceeding 2.0m up to 2.5m	m	70		
3.2.45		- Depth exceeding 2.5m up to 3.0m	m	70		
3.2.46		- Depth exceeding 3.0m up to 3.5m	m	70		
3.2.47		- Depth exceeding 3.5m up to 4.0m	m	70		
3.2.48		- Depth exceeding 4.0m up to 4.5m	m	70		
3.2.49		- Depth exceeding 4.5m up to 5.0m	m	70		
	8.3.4 (b) PSDB 8.3.4 (b)	<b>(b) Temporary works: Control water at special water hazards as defined in subclause 5.1.2.2:</b>				
3.2.50		(i) Provide equipment	Sum	-		
3.2.51		(ii) Operate and maintain	Days	30		
3.2.52		(iii) Remove equipment	Sum	-		
	8.3.5	<b>Existing services that intersect or adjoin a pipe trench</b>				
	8.3.5a	<b>Services that intersect a trench</b>				
3.2.53		- Cables	No	10		
3.2.54		- House water connections	No	10		
3.2.55		- Water mains up to 300mm diameter	No	10		
3.2.56		- Water mains over 300mm diameter	No	10		
3.2.57		- Stormwater pipes up to 600mm diameter	No	10		
3.2.58		- Stormwater pipes over 600mm diameter	No	10		
3.2.59		- Gas pipes	No	10		
3.2.60		- Sewer pipes	No	10		
<b>TOTAL CARRIED FORWARD</b>						

SECTION 3: SEWERS						
Item	Payment Refers	Description	Unit	Quantity	Rate	Amount
<b>BROUGHT FORWARD</b>						
	8.3.5b	<b>Services that adjoin a trench</b>				
3.2.61		- Cables	m	70		
3.2.62		- House water connections	m	70		
3.2.63		- Water mains up to 300mm diameter	m	70		
3.2.64		- Water mains over 300mm diameter	m	70		
3.2.65		- Stormwater pipes up to 600mm diameter	m	70		
3.2.66		- Stormwater pipes over 600mm diameter	m	70		
3.2.67		- Gas pipes	m	70		
3.2.68		- Sewer pipes	m	70		
	8.3.6.1					
	PSDB 8.3.6.1	<b>Reinstate road surfaces complete with all courses:</b>				
3.2.69	PSDB 8.3.6.1a	(a) Backfill using trenchfill	m <sup>3</sup>	10		
3.2.70	PSDB 8.3.6.1b	(b) Hot Asphalt Type Iva (Min. 40mm thickness)	m <sup>2</sup>	70		
3.2.71	PSDB 8.3.6.1c	(c) Brick paved Driveways and Walkways	m <sup>2</sup>	70		
3.2.72	PSDB 8.3.6.1d	(d) Concrete Driveways and Walkways (min thickness 100mm)	m <sup>2</sup>	70		
3.2.73	PSDB 8.3.6.1e	(e) Grass verges and Lawns	m <sup>2</sup>	70		
	8.3.7					
3.2.74	PSDB 8.3.7	<b>Traffic Control - Minor Works</b>	No	50		
	PSDB 8.3.8	<b>Extra-over item 3.2.74 for supplying and erecting additional road signs (as ordered by the Engineer)</b>				
3.2.75		(i) Construction ahead signs	No	2		
3.2.76		(ii) Speed restriction signs	No	2		
3.2.77		(iii) Drums	No	10		
3.2.78		(iv) Hand held stop/go signs	No	2		
3.2.79		(v) Traffic cones	No	20		
3.2.80		(vi) Flagman	No	4		
3.2.81		(vii) Delineators	No	20		
3.3	SABS 1200 LB	<b>BEDDING (PIPES)</b> <b>as specified in SABS 1200 LB and in the Scope of Work</b>				
	8.2.1	<b>Provision of bedding from trench excavation:</b>				
3.3.1		(a) Selected granular material	m <sup>3</sup>	10		
3.3.2		(b) Selected fill material	m <sup>3</sup>	10		
	8.2.2	<b>Supply only of bedding by importation:</b>				
	8.2.2.1	<b>From other necessary excavations:</b>				
3.3.3		(a) Selected granular material	m <sup>3</sup>	10		
3.3.4		(b) Selected fill material	m <sup>3</sup>	10		
<b>TOTAL CARRIED FORWARD</b>						

SECTION 3: SEWERS						
Item	Payment Refers	Description	Unit	Quantity	Rate	Amount
<b>BROUGHT FORWARD</b>						
	8.2.2.3 PSLB 8.2.2.3	<b>From commercial sources:</b>				
3.3.5		(a) Selected granular material	m <sup>3</sup>	10		
3.3.6		(b) Selected fill material	m <sup>3</sup>	10		
3.3.7	PSLB 8.2.2.3 c	(c) 6.7mm concrete stone to SABS 1083	m <sup>3</sup>	10		
3.3.8		(d) Supply and install Geofabric material (Kaytech A2 or similar approved)	m <sup>2</sup>	70		
	8.2.3	<b>Concrete Bedding Cradle</b>				
3.3.9		Class A, 20MPa/19, section 600x300mm, shuttered on both sides with pipes tied down to prevent floating	m <sup>3</sup>	10		
	8.2.4 PSLB 8.2.4	<b>Encasing of Pipes in 20 MPa/19 Concrete :</b>				
3.3.10		- 100mm diameter pipes	m <sup>3</sup>	10		
3.3.11		- 150mm diameter pipes	m <sup>3</sup>	10		
3.3.12		- 200mm diameter pipes	m <sup>3</sup>	10		
3.3.13		- 250mm diameter pipes	m <sup>3</sup>	10		
3.3.14		- 300mm diameter pipes	m <sup>3</sup>	10		
3.3.14		- 300mm diameter pipes	m <sup>3</sup>	10		
3.3.15		- 350mm diameter pipes	m <sup>3</sup>	10		
<b>3.4</b>	<b>SABS 1200 LD</b>	<b>SEWERS as specified in SABS 1200 LD and in the Scope of</b>				
	8.2.1 PSLD 8.2.1	<b>Supply, Lay, Joint, Bed and Test Pipeline</b>				
		<b>(a) uPVC heavy duty Class 34 pipe, irrespective of depth, for the following lateral and house connection</b>				
3.4.1		- 110mm diameter	m	70		
3.4.2		- 160mm diameter	m	70		
	8.2.2 PSLD 8.2.2	<b>Extra over items 3.4.1 through to 3.4.2 for specials:</b>				
		<b>(a) Supply and install uPVC pipe adaptors to connect heavy duty Class 34 pipes, irrespective of depth, for the following lateral and house connection sizes :</b>				
3.4.3		- 110mm diameter uPVC	No	10		
3.4.4		- 160mm diameter uPVC	No	10		
		<b>(b) Supply and install uPVC heavy duty Class 34 x 45° bends, irrespective of depth, for the following lateral and house connection sizes :</b>				
3.4.5		- 110mm diameter	No	10		
3.4.6		- 160mm diameter	No	10		
<b>TOTAL CARRIED FORWARD TO SUMMARY</b>						

**SECTION 4: PIPE BURSTING**

Item	Payment Refers	Description	Unit	Quantity	Rate	Amount
<b>4</b>		<b>SECTION 4: PIPE BURSTING</b>				
<b>4.1</b>		<b>SITE ESTABLISHMENT</b>				
4.1.1		(a) Establishment charges for all plant, equipment and labour to undertake pipe bursting of sewers and removal of such on completion of the contract	Sum	-		
4.1.2		(b) Moving of all plant, equipment and materials for pipe bursting from works area to works area	No	10		
<b>4.2</b>	<b>PA</b>	<b>CCTV INSPECTION as specified in Particular Specification PA</b>				
4.2.1	PA 8.2.1	Conduct CCTV inspection, with Closed-Circuit Pan-and-Rotate Television, prior to starting work to locate all existing service connections exactly longitudinally and radially and log for reinstatement following installation of the liner	m	70		
4.2.2		Conduct a CCTV inspection after completion of all work	m	70		
<b>4.3</b>	<b>SASTT-TS-</b>	<b>PIPE BURSTING as specified in SASTT-TS-TT2 and in the Scope of</b>				
	TS-TT2 6.1	<b>Supply, lay, joint and test pipe lining through pipe</b>				
		<b>(a) Pipe bursting of the following pipe diameters with PE 80 PN 10 High Density Polyethylene (HDPE) SDR 17 pipe complying with SANS ISO 4427, as specified:</b>				
4.3.1		- Existing 100mm ID pipe with 110mm OD pipe, butt welded	m	70		
4.3.2		- Existing 150mm ID pipe with 160mm OD pipe, butt welded	m	70		
4.3.3		- Existing 200mm ID pipe with 200mm OD pipe, butt welded	m	70		
4.3.4		- Existing 225mm ID pipe with 225mm OD pipe, butt welded	m	70		
4.3.5		- Existing 250mm ID pipe with 250mm OD pipe, butt welded	m	70		
4.3.6		- Existing 300mm ID pipe with 315mm OD pipe, butt welded	m	70		
4.3.7		- Existing 350mm ID pipe with 355mm OD pipe, butt welded	m	70		
4.3.8		- Existing 400mm ID pipe with 400mm OD pipe, butt welded	m	70		
		<b>(b) Up-sizing pipe bursting and replacement of the following pipe diameters with PE 80 PN 10 High Density Polyethylene (HDPE) SDR 17 pipe complying with SANS ISO 4427 as specified:</b>				
4.3.9		- Existing 100mm ID pipe with 125mm OD pipe, butt welded	m	70		
4.3.10		- Existing 100mm ID pipe with 160mm OD pipe, butt welded	m	70		
4.3.11		- Existing 100mm ID pipe with 200mm OD pipe, butt welded	m	70		
4.3.12		- Existing 150mm ID pipe with 200mm OD pipe, butt welded	m	70		
4.3.13		- Existing 150mm ID pipe with 225mm OD pipe, butt welded	m	70		
4.3.14		- Existing 150mm ID pipe with 250mm OD pipe, butt welded	m	70		
<b>TOTAL CARRIED FORWARD</b>						

SECTION 4: PIPE BURSTING						
Item	Payment Refers	Description	Unit	Quantity	Rate	Amount
<b>BROUGHT FORWARD</b>						
4.3.15		- Existing 150mm ID pipe w ith 280mm OD pipe, butt w elded	m	70		
4.3.16		- Existing 200mm ID pipe w ith 225mm OD pipe, butt w elded	m	70		
4.3.17		- Existing 200mm ID pipe w ith 250mm OD pipe, butt w elded	m	70		
4.3.18		- Existing 200mm ID pipe w ith 280mm OD pipe, butt w elded	m	70		
4.3.19		- Existing 200mm ID pipe w ith 315mm OD pipe, butt w elded	m	70		
4.3.20		- Existing 225mm ID pipe w ith 250mm OD pipe, butt w elded	m	70		
4.3.21		- Existing 225mm ID pipe w ith 280mm OD pipe, butt w elded	m	70		
4.3.22		- Existing 225mm ID pipe w ith 315mm OD pipe, butt w elded	m	70		
4.3.23		- Existing 225mm ID pipe w ith 355mm OD pipe, butt w elded	m	70		
4.3.24		- Existing 250mm ID pipe w ith 280mm OD pipe, butt w elded	m	70		
4.3.25		- Existing 250mm ID pipe w ith 315mm OD pipe, butt w elded	m	70		
4.3.26		- Existing 250mm ID pipe w ith 355mm OD pipe, butt w elded	m	70		
4.3.27	TS-TT2 6.2	<b>Modification of manholes to receive pipe bursting</b>	No	70		
	TS-TT2 6.3	<b>Re-construct manhole benching and line channel with a chemically resistant epoxy coating such as SikaTop-Seal 107 or similar for the following existing nominal pipe diameters:</b>				
4.3.28		- 110mm diameter	No	10		
4.3.29		- 160mm diameter	No	10		
4.3.30		- 200mm diameter	No	10		
4.3.31		- 225mm diameter	No	10		
4.3.32		- 250mm diameter	No	10		
4.3.33		- 300mm diameter	No	10		
4.3.34		- 350mm diameter	No	10		
4.3.35		- 400mm diameter	No	10		
4.3.36		- 450mm diameter	No	10		
4.3.37		- 600mm diameter	No	10		
4.3.38		- 750mm diameter	No	10		
4.3.39		- 900mm diameter	No	10		
<b>TOTAL CARRIED FORWARD</b>						

SECTION 4: PIPE BURSTING						
Item	Payment Refers	Description	Unit	Quantity	Rate	Amount
<b>BROUGHT FORWARD</b>						
	TS-TT2 6.4	<p><b>Extra over items 5.3.1 through to 5.3.26 for specials:</b></p> <p><b>(a) Supply and install uPVC heavy duty Class 34 x 45° saddles, complete with stainless steel straps and 10MPa concrete on HDPE pipe, irrespective of depth, for the following lateral and house connection sizes:</b></p>				
5.3.40		- 110mm x 110mm diameter	No	10		
5.3.41		- 160mm x 110mm diameter	No	10		
5.3.42		- 200mm x 110mm diameter	No	10		
5.3.43		- 250mm x 110mm diameter	No	10		
5.3.44		- 200mm x 160mm diameter	No	10		
5.3.45		- 250mm x 160mm diameter	No	10		
<b>TOTAL CARRIED FORWARD TO SUMMARY</b>						



**C2.3 : SUMMARY OF THE SCHEDULE OF RATES**

SECTION	DESCRIPTION	AMOUNT
1	PRELIMINARY AND GENERAL	R
2	SITE CLEARANCE	R
3	SEWERS	R
4	PIPE BURSTING	R

<b>SUB TOTAL A: TOTAL OF PRICED ITEMS</b>	R .....
ADD 15% VAT TO SUB TOTAL B	R
<b>FICTITIOUS OFFER AMOUNT CARRIED FORWARD TO FORM OF OFFER (C1.1)</b>	<b><u>R .....</u></b>

**Notes:**

1. The Contract Price is subject to Contract Price Adjustment in terms of Clause 6.8.2 of the Conditions of Contract.
2. The above quotation amount is assumed fictitious to derive at a quotation amount for adjudication purposes, and the specific Work Order will quantify the scope based on these tendered rates in order to derive the Contract Amount.
3. The undersigned, who warrants that he / she is duly authorised to do so on behalf of the enterprise, confirms that the contents of this schedule are within my personal knowledge and are to the best of my belief both true and correct.

Signed ..... Date .....

Name ..... Position .....

Bidder .....

**T2.1.2: PAYMENT OF MUNICIPAL ACCOUNTS (A2)**

**Attach, as part of the tender submission, a valid Billing Clearance certificate from the Nelson Mandela Bay Municipality and any other local municipal entity.**

In terms of Section 38(1)(d)(i) of the Supply Chain Management Regulation, the Accounting Officer must reject any bid from a bidder if any municipal rates and taxes or service charges owed by that bidder or any of its directors to any Municipality, or to any other municipal entity, are in arrears for more than three months. In this regard, the following is also required:

- In the event that the bidder (company) or directors are renting the premises, a valid rental agreement must be submitted.
- Statement of accounts submitted must not be older than three months.
- Bidders who reside outside the NMBM must submit a Billing Clearance Certificate from the NMBM and an updated Statement of Municipal Accounts from their respective municipality.

The bidder shall attach on this page, a Municipal Accounts Billing Clearance Certificate, which provides proof that his/her payment of Municipal Accounts is up to date. The abovementioned information must be submitted with the bid document before the closing date.

The municipality reserves the right to request an updated Billing Clearance Certificate/municipal account.

These certificates are obtained from the Supply Chain Management Offices, Corner Buxton Avenue and Harrower Road, North End, Port Elizabeth.

Billing Clearance

Tel:41 506 3136

Fax 086 577 3809

Email:[billclear@mandelametro.gov.za](mailto:billclear@mandelametro.gov.za)

**T2.1.14: DECLARATION OF INTEREST IN TENDER OF PERSONS IN SERVICE OF THE STATE**

- 1. No bid will be accepted from persons in the service of the state\*.
- 2. Any person, having a kinship with persons in the service of the state, including a blood relationship, may make an offer or offers in terms of this invitation to bid. In view of possible allegations of favouritism, should the resulting bid, or part thereof, be awarded to persons connected with or related to persons in service of the state, it is required that the bidder or their authorised representative declare their position in relation to the evaluating/ adjudicating authority and/or take an oath declaring his/her interest.
- 3. To give effect to the above, the following questionnaire must be completed and submitted with the bid.**

3.1 Full Name: .....

3.2 Identity Number: .....

3.3 Company Registration Number: .....

3.4 Tax Reference Number: .....

3.5 VAT Registration Number: .....

3.6 Are you presently in the service of the state\* **YES/NO**

3.6.1 If so, furnish particulars.

.....

.....

3.7 Have you been in the service of the state for the past twelve months? **YES/NO**

3.7.1 If so, furnish particulars.

.....  
.....

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\*MSCM Regulations: "in the service of the state: means to be –

(a) a member of –

- (i) any municipal council
- (ii) any provincial legislature; or
- (iii) the national Assembly or the national Council of provinces;

(b) a member of the board of directors of any municipal entity;

(c) an official of any municipality or municipal entity;

(d) an employee of any national or provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1990 (Act No.1 of 1999);

(e) a member of the accounting authority of any national or provincial public entity, or

3.8 Do you, have any relationship (family, friend, other) with persons in the service of **YES/NO**

The state and who may be involved with the evaluation and or adjudication of this bid?

3.8.1 If so, furnish particulars.

.....  
.....

3.9 Are you, aware of any relationship (family, friend, other) between a bidder and any **YES/NO**

persons in the service of the state who may be involved with the evaluation and or adjudication of this bid?

3.9.1 If so, furnish particulars.

.....  
.....

3.10 Are any of the company's directors, managers, principal shareholders  
**YES/NO**

or stakeholders in the service of the state?

3.10.1 If so, furnish particulars.

.....  
.....

3.11 Are any spouse, child or parent of the company's directors, managers,  
**YES/NO**

principal shareholders or stakeholders in service of the state?

3.11.1 If so, furnish particulars.

.....  
.....

**CERTIFICATION**

**I, THE UNDERSIGNED (NAME) .....**

**CERTIFY THAT THE INFORMATION FURNISHED ON THIS DECLARATION FORM IS CORRECT.  
I ACCEPT THAT THE STATE MAY ACT AGAINST ME SHOULD THIS DECLARATION PROVE TO  
BE FALSE.**

.....  
Signature

.....  
Date

.....  
Position

.....  
Name of bidder

<b>T2.1.16: DECLARATION OF BIDDER'S PAST SUPPLY CHAIN MANAGEMENT PRACTICES</b>
--

1. This Municipal Bidding Document must form part of all bids invited.
2. It serves as a declaration to be used by municipalities and municipal entities in ensuring that when goods and services are being procured, all reasonable steps are taken to combat the abuse of the supply chain management system.
3. The bid of any bidder may be rejected if that bidder, or any of its directors have:
  - a. abused the Municipality's / Municipal entity's supply chain management system or been guilty of any improper conduct in relation to such system;
  - b. been convicted for fraud or corruption during the past five years;
  - c. wilfully neglected, reneged on, or failed to comply with any government, Municipal or other public sector contract during the past five years; or
  - d. been listed in the Register for Tender Defaulters in terms of Section 29 of the Prevention and Combating of Corrupt Activities Act, 2004 (Act 12 of 2004).
4. In order to give effect to the above, this form and the questionnaire must be completed in full and signed. Failure to comply will result in the tender being disqualified.

ITEM	QUESTION	RESPONSE	
4.1	<p><b>Is the bidder or any of its directors listed on the National Treasurer's database as a company or persons prohibited from doing business with the public sector?</b></p> <p>(Companies for persons who are listed on this database were informed in writing of this restriction by the National Treasury after the <i>audi alteram partem</i> rule was applied)</p> <p><b>The Databases of Restricted Suppliers now resides on the National Treasury's website (<a href="http://www.treasury.gov.za">www.treasury.gov.za</a>) and can be accessed by clicking on its link at the bottom of the home page.</b></p>	Yes	No
	If so, furnish particulars:		



4.2	<p><b>Is the bidder or any of its directors listed on the Register for Tender Defaulters in terms of Section 29 of the Prevention and Combating of Corrupt Activities Act, 2004 (Act 12 of 2004)?</b></p> <p>The Register for Tender Defaulters can be accessed on the National Treasury's website (<a href="http://www.treasury.gov.za">www.treasury.gov.za</a>) and can be accessed by clicking on its link at the bottom of the home page.</p>	Yes	No
If so, furnish particulars:			
4.3	<p><b>Was the bidder or any of its directors convicted by a court of law (including a court of law outside the Republic of South Africa) for fraud or corruption during the past five years?</b></p>	Yes	No
If so, furnish particulars:			
4.4	<p><b>Does the bidder or any of its directors owe any municipal rates and taxes or municipal charges to the Municipality/Municipal entity, or to any other Municipality/Municipal entity, that is in arrears for more than three months?</b></p>	Yes	No
If so, furnish particulars:			
4.5	<p><b>Was any contract between the bidder and the Municipality / Municipal entity or any other organ of state terminated during the past five years on account of failure to perform on or comply with the contract?</b></p>	Yes	No
If so, furnish particulars:			

**CERTIFICATION**

**I, THE UNDERSIGNED (FUL NAME) .....**

**CERTIFY THAT THE INFORMATION FURNISHED ON THIS DECLARATION FORM IS TRUE AND CORRECT.**

**I ACCEPT THAT, IN ADDITION TO CANCELLATION OF THE CONTRACT, ACTION MAY BE TAKEN AGAINST ME SHOULD THIS DECLARATION PROVE TO BE FALSE.**

Signature .....

Date .....

Position .....

Name of bidder .....

**T2.1.17: CERTIFICATE OF INDEPENDENT BID DETERMINATION**

1. This Municipal Bidding Document (MBD) must form part of all bids<sup>1</sup> invited.
2. Section 4 (1) (b) (iii) of the Competition Act No.89 of 1998, as amended, prohibits an agreement between, or concerted practice by, firms or a decision by an association of firms, if it is between parties in a horizontal relationship and if it involves collusive bidding (or bid rigging).<sup>2</sup> Collusive bidding is a pe se prohibition meaning that it cannot be justified under any grounds.
3. Municipal Supply Regulation 38 (1) prescribes that a supply chain management policy must provide measures for the combating of abuse of the supply chain management system, and must enable the accounting officer, among others, to:
  - (a) Take all reasonable steps to prevent such abuse;
  - (b) Reject the bid of any bidder if that or any of its directors has abused the supply chain management system of the municipal entity or has committed any improper conduct in relation to such system; and
  - (c) Cancel a contract awarded to a person if the person committed any corrupt or fraudulent act during the bidding process or the execution of the contract.
4. This MBD serves as a certificate of declaration that would be used by institutes to ensure that, when bids are considered, reasonable steps are taken to prevent any form of bid-rigging.
5. In order to give effect to the above, the attached Certificate of Bid Determination (MBD 9) must be completed and submitted with the bid:

<sup>1</sup> Includes price quotations, advertised competitive bids, limited bids and proposals.

<sup>2</sup> Bid rigging (or collusive bidding) occurs when businesses, that would otherwise be expected to compete, secretly conspire to raise prices or lower the quality of goods and/or services for purchasers who wish to acquire goods and/or services through a bidding process. Bid rigging is, therefore, an agreement between competitors not to compete.

**CERTIFICATE OF INDEPENDENT BID DETERMINATION**

I, the undersigned in submitting the accompanying bid:

---

(Bid Number and Description)

In response to the invitation for the bid made by:

---

(Name of Municipality/Municipal Entity)

Do hereby make the following statements that I certify to be true and complete in every respect:

I certify, on behalf: \_\_\_\_\_

(Name of Bidder)

1. I have read and I understand the contents of this certificate;
2. I understand that the accompanying bid will be disqualified if this certificate is found not to be true and complete in every respect;
3. I am authorized by the bidder to sign this certificate, and to submit the accompanying bid, on behalf of the bidder;
4. Each person whose signature appears on the accompanying bid has been authorized by the bidder to determine the terms of, and to sign, the bid, on behalf of the bidder;
5. For the purposes of this certificate and the accompanying bid, I understand that the word “competitor” shall include any individual or organization, other than the bidder, whether or not affiliated with the bidder, who:
  - a) Has been requested to submit a bid in response to this bid invitation;
  - b) Could potentially submit a bid in response to this bid invitation, based on their qualifications, abilities or experience; and
  - c) Provides the same goods and services as the bidder and/or is in the same line of business as the bidder
6. The bidder has arrived at the accompanying bid independently from, and without consultation, communication, agreement or arrangement with any competitor. However, communication between partners in a joint venture consortium \* will not be construed as collusive bidding.
7. In particular, without limiting the generality of paragraphs 6 above, there has been no consultation, communication, agreement, or arrangement with any competitor regarding:
  - a) Prices;
  - b) Geographical area where product or service will be rendered (market allocation)
  - c) Methods, factors, or formulas used to calculate prices
  - d) The intention or decision to submit or not to submit, a bid;
  - e) The submission of a bid which does not meet the specifications and conditions of the bid; or
  - f) Bidding with the intention not to win the bid.

\*Joint venture or consortium means an association of persons for the purpose of combining their expertise, property, capital, efforts, skill, and knowledge in an activity for the execution of a contract.

8. In addition, there have been no consultations, communications, agreements, or arrangements with any competitor regarding the quality, quantity, specifications and conditions or delivery particulars of the products or services to which this bid invitation relates.
9. The terms of the accompanying bid have not been, and will not be, disclosed by the bidder, directly or indirectly, to any competitor, prior to the date and time of the official bid opening or of the awarding of the contract.

10. I am aware that, in addition and without prejudice to any other remedy provided to combat any restrictive practices related to bids and contracts, bids that are suspicious will be reported to the Competition Commission for investigation and possible imposition of administrative penalties in terms of section 59 of the Competition act no. 89 of 1998 and or may be reported to the National Prosecuting Authority (NPA) for criminal investigation and or may be restricted from conducting business with the public sector for a period not exceeding ten (10) years in terms of the prevention and combating of Corrupt Activities Act no. 12 of 2004 or any other applicable legislation.

Signature .....

Date .....

Position .....

Name of bidder .....